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For the Southern Agriculturist.

EXAMINATION OF MR. EDMUND RHETT'S AGRICULTURAL ADDRESS—BY WM. ELLIOTT, ESQ.

Mr. Editor :—In the 12th number of the Southern Cabinet, you have published the Address of Edmund Rhett, Esq., before the Beaufort Agricultural Society. Objectionable as I deem many passages of that Address, it should have gone before the public without comment from me, had not the author seen fit to make the doctrine of production, as embodied in an Address delivered two years previously by myself, before the same Society, the subject of direct allusion, and very pointed animadversion. With little leisure to indulge in metaphysical disquisition, and with as little inclination to provoke discussion with a gentleman of the law, whose very vocation is controversy, I feel myself nevertheless, impelled to vindicate my opinions, to support them by new proofs, explain them by new illustrations, and expose the fallacy or irrevelancy of the reasonings, by which they have been assailed.

The purpose of my address was to impress upon the members of the Agricultural body the importance, political and taxable, of the great interest to which they belonged; and to awaken them to a sense of the neglect they had habitually experienced from the Legislature. To shew them, which was easy by a reference to the tax books, that the Agricultural interests paid on their houses, lands and negroes, the great bulk of State taxes, while no schools for improvement in their art, no bounties for encouragement—no Surveys, Geological or Agricultural, had been instituted; while, with a solitary exception, no outlays had ever been made by the Legislature for the benefit of that class, whose gains had so long and bountifully replenished the public coffers. In the progres of my remarks, I proceeded to shew that they were not only the chief tax payers, but the chief producers, and that without their labors the State would be consigned to poverty and insignificance; that this habitual neglect was therefore impolitic as well as unjust, since it was clear that every encouragement given to the great productive class, would, by aiding production, directly increase the power of the State, in increasing its ability to tax.

For these and other reasons, I urged on the Planters the propriety of strengthening themselves in the Legislative Councils by a more liberal selection from the intelligent class to which they belonged—

that their claims might therefore receive their just attention—that a new direction might be given to the Legislative views—that their Representatives should less busy themselves in the great struggles of national politics; and with questions in which ambitious aspirants to office had the chief concern, and devote themselves instead to develop the resources of the State, to stimulate production and encourage those pursuits, in which the body of their constituency had a primary, not to say a paramount interest.

More than two years, Mr. Editor, have now passed since these views were presented—and they are just as applicable now as then. The Planters have not been awakened to the necessity of protecting their own interests. The Legislature have not been forward to promote them, and indeed should they adopt either of the notable opinions of Mr. Rhett, "That there is no such thing as material value," or the other, (though inconsistent with it,) "That all labor is alike productive, though in different proportions,"—it is not likely that they ever will. I blush when I recollect that the State of Massachusetts, with her barren soil, and with an immense stake in manufacturing and commercial industry, has done more to develope the resources of her territory than we, who have but this one great interest to foster. Where are our Surveys, Geological or Agricultural? Where are these "Reports," so comprehensive yet minute —so full of valuable facts—so free of impracticable theory—the charts, as it were, by which the enquiring farmer may direct his course? Alas! where is our Coleman!!

I here insert from my Address of June, 1838, the passage which contains the doctrine of production:—

"The soil of Carolina, is nevertheless the great laboratory of her wealth, and the planter is the principal elaborator. Other classes do indeed add something to the aggregate. The merchant, who exports the domestic product, and replaces it by a foreign article, worth more than that exported, is a *producer* to the full extent of the difference in value. The axeman who fells the forest trees—the sawyer who converts them into boards, and the carpenter who fashions them into useful forms, and converts them into the abode of man—have each by their labor, produced new values, and are to be regestered among the productive classes. But giving full credit to the additions made from these sources to the general stock of wealth, the great mass beyond all question, proceeds from the agricultural class. Few countries in the world are so purely agricultural: and as wealth is every where the chief object of taxation, so shall we perceive the agriculture of Carolina, is assumed to represent it, and is taxed accordingly: not only by the Federal Government, in the duties on bagging chargeable on the cotton, and on negro cloths, blankets, &c., chargeable on the slave who produces it—and both, thus chargeable on the planter,—but we find that agriculture is the favorite and almost exclusive object of direct

taxation by our own State. The *lands and negroes* of the planter, pay the great bulk of the funds raised for state purposes; and though a tax is levied on professions, and on stock in trade, it is easy to shew that these, though more circuitously, are substantially in part at least, taxes on the agricultural interest. For is it not true, that the trade considers this tax, as an item in the cost of his goods? Is not the price of the article on sale, raised so as to cover this tax, and leave him the same profit, as if the tax had never been imposed? If this supposition be just, who pays the tax on the stock in trade? not the trader, but the planter who consumes his goods, and who pays his tax, as an item in its original cost. And though in respect to professions, the recoil of the tax on the agricultural interest, is not so clearly to be deduced, there is little doubt, but that a portion of it can be shewn to have taken the same direction. The exception, if any, will be, when the celebrity of the professional character is such, as to attract fees from a foreign country. In that case he may be said to be a producer, so far as his own country is concerned. He adds nothing indeed to the values already existing in the world, but diverts to his own region, what would otherwise never have circulated there. When the celebrity of Doctor Physic attracted the sick from the West Indies, from Mexico and South America, to consult him for their complaints, he was a producer, so far as this country was concerned; and when he attracted them from other States of the Union, he was a producer, so far as the State of Pennsylvania was concerned; yet he created no money values, and added not so much to the wealth already existent, as the man who reared a bed of cabbages, or constructed the wheel of a cart. In like manner, Mr. Webster, when his legal celebrity has drawn to him a foreign client, may be said to be a productive laborer, so far as this country is concerned; and where the client comes from another State, so far as the State in which he resides is concerned. Otherwise, the laborer who cultivates his farm, adds more to the aggregate of wealth, than the distinguished Jurist, who does in truth but circulate and transfer values already existing, independent of his efforts. So too, with the gentlemen of the clerical profession—they produce no taxable values; the labors of the pulpit pay no tithes! the tax-collector never reaches them. So too with all who belong to the naval or military service—they and the members of the learned professions stand in the same category: they are politico—economically speaking—unprofitable servants, reaping where they have not sown; producing nothing; absorbing simply, and transferring to themselves, what was before produced by the labor of others! I am not Vandal enough to say, that the class of the learned professions is therefore useless, or could in any well ordered society, be dispensed with: I merely say that they are not producers, except incidentally *instrumentally*, as Dr. Paley hath it. The lawyer, by establishing a certain title to land that was

before in dispute, may give a character of permanency to the improvements, and authorize the outlay of capital, which will increase its value. The doctor, by healing the diseases of the farmer, may restore his strength, and fit him for the labors of agriculture. The parson, by inculcating the sublime precepts of the Christian morality, may allay the violence of the passions, confirm the reign of law and order, and thus augment the value of all property, by increasing the security of the possessor: and the soldier, armed for the public defence, may shew that a career of violence or rapacity could not be indulged with impunity, and thus secure the blessings of peace. But I repeat, they produce no money values—there is just as much wealth in the State without these classes, as with them. To illustrate my meaning, let us suppose a community altogether composed of lawyers, doctors, divines and soldiers, with no other outfit, than their professional merit; relying on professional effort alone for support. If the indiscretion of matrimony could be supposed of a community so constituted, the parson might tie the knot but he could scarcely touch the fee, even for this interesting service! The lawyer might draw the contingent deeds, and conveyances in posse, but they could convey nothing into his own pocket, (but a promisory note, perhaps, which would require more endorsers at bank, than there were professions in the community.) The doctor might be called to prescribe, but the consolation of curing, would be his only compensation: and the soldier, after a keen reconnoissance, would strike his tent in despair, and march off from a post, that afforded neither pay nor rations. It is wonderful how soon this society would resolve itself into its original elements—no arbitrators would be called in to settle conditions; they would shake hands and part company with all alacrity, and with infinite good will. But suppose on the other hand. a society all farmers. They would grow corn; they would raise stock; they would create values, and secure the means of subsistence. It is true that their society would be considered somewhat primitive; they would lack some of the comforts and refinements that belong to the social state, as enjoyed by us, but they could live, could subsist, and after a while, the doctor, who had abandoned the association of the liberal professions, might be called in to set a limb, and liking the comfortable aspect of affairs, might remain, in expectation of another fracture! And the lawyer might be called to settle a boundary between two pursy landlords, whose full barns had made them litigious. And the parson might be found asking a blessing on the labors of the husbandman, and hinting perhaps of the reasonableness of tithes. And the soldier, planting his standard in this land so fruitful in forage, might unfurl it to the breeze, and swear with the emphasis of a Texian patriot, to live and die by the country of his adoption. Now, we have *increased numbers* in our community, but no increase of wealth; except indeed instrumentally, or in so

far as increase of population is increase of wealth—a notion combatted by Malthus, and denied by all members of overgrown families! We have no increase of wealth, but a change merely in the laws of distribution. The wealth of the producers has gone in part to pay for professional services, and has thus been divided among a greater number of participants! Hitherto, gentlemen, the members of the liberal profession have produced nothing—but let the physician, jurist, preacher, militarist, publish a book, and let that book sell, and they are redeemed from their unprofitable state; they have produced values; and are productive laborers in the strictest sense, as well as the farmer, manufacturer, merchant or mechanic.

Now we have seen that the members of the liberal professions (except as before excepted) produce nothing. But they do not devote themselves to a life of study, labor, privation, abstinence, without the prospect of compensation. Neither is it just that they should; nor is it true, in general, that they do. Every man who rises beyond the level of mediocrity, will be adequately paid—he receives his compensation from the wealth that already exists. The measure of the tax will be swallowed up in the dimensions of the fee, and the producer, after all, must pay! What now has become of *the tax on professional income?*"

This is the doctrine that the gentleman proceeds to overthrow. And first, he launches his bolt at M. Quesnoi, as the originator of the fallacy that the Agriculturist was the *only* producer. With the writings of this economist, I have no familiarity, but if he is fairly rendered, as holding "that Agriculture was the only source of *all* national wealth and revenue," he must have been a sorry Philosopher and an uninstructed Christian, for had he read either Homer, or his Bible, or observed, indeed, the daily occurrences of life, he must have perceived that products, not agricultural, but just as material, and resulting from labor, just as easily reduced to the standard of price, were constantly given in exchange for agricultural products. Yet, had he said that agriculture was the basis and the most productive source of national wealth, he would have announced a principle which, with whatever subtlety it may be mistified, cannot be long obscured, and with whatever vigor, assailed, cannot be overthrown.

After singing the requiem over the remains of Quesnoi, and declaring that his "argument was no longer supported by any body," and that "his theory" was exploded, Mr. Rhett proceeds to add, "that it is common enough to see its hoary fallacies paraded before us, in all the tidiness and pomp of the newest and most momentous truths." Leaving all whom it might concern, to digest this remark, as they best might, he proceeds to condemn the political system of Dr. Adam Smith. That system merely went to admit among producers, those who were so obviously so,---mechanics, merchants,

and the like,---that the common sense of mankind revolted at their exclusion: but it was still unsound, for says he, "it was only modifying, not abolishing the original error, for all classes of laborers were not admitted within the pale of honor."

I am far from the vanity of supposing that the well considered published opinions of that profound, comprehensive, and luminous writer require any enforcement from me. At all events, I feel that the effort would be presumtuous, and I shall not attempt it,---"*non nostrum, tantas componere lites*," I shall content myself with defending the positions taken by myself. They are taken from my own reflection uninfluenced by any recent examination of "the Wealth of Nations," and if they agree substantially with the views promulgated by so great a name as Adam Smith, I shall but feel the greater assurance of their truth.

The error of Dr. Smith, as assumed by the gentleman, is productive of this, among other evils. "From the single and really unmeaning circumstance of the labor of certain classes appearing to be unproductive directly of material values, as they are called, they (persons,) leap to the conclusion, that it is productive of no value at all." This being a side blow at myself, and at all who entertain the same doctrines, I feel called on to remark, that the influence is plainly unwarranted by the premises, and that it is no objection to a good maxim, or just proposition---that false reasoners may thence draw illogical consequences. And when the gentleman in the following sentence proceeds to ask "whether it is possible to believe that judges, teachers, surgeons, lawyers, statesmen, &c., live for no valuable purpose?" We reply, that we have never thought, nor expressed any such absurdity, but that the question which we made was simply this:---Whether they were directly producers?

Mr. Rhett next proceeds to examine the nature of wealth. It is, he says, (and I agree with him,) "an accumulation of exchangable values," values that have been or may be exchanged for others, their equivalents. Every result of human labor which ministers to the wants and comforts of man, whether tangible or intangible, material or immaterial, is an element of wealth. Does it not follow then, he asks, "that he who by his labor, be it never so immaterial, has accumulated that wealth, or originated the equivalents for which that wealth is substituted, and which that wealth represents---is a producer?" we answer No! It would be but a confounding of terms to call him a producer. He is an *accumulator!* He gathers wealth for himself, not for the State. He transfers to himself a portion of the pre-existent wealth, and the sum of material, tangible, taxable wealth in the society,---the wealth that can raise an army, or equip a fleet, or endow a college, remains precisely as it was before. Difficulty, the gentleman proceeds, has been given to this subject by unsettled ideas "of *the nature of value*

about which so little has been thought, and so much said." Matter he tells us "is no ingredient of value at all," and "the planter no more creates, or adds to the matter he is concerned with, than the merchant or any other person." This is a startling assertion to men, accustomed to place the single grain in the earth and reap the full sized ear—to increase the matter they are concerned with—videlicet, a grain of corn, a hundred fold by their labor, before it passes into the hands of the merchant, (who merely transports, without increasing it.) But we may suppose, from the sentence which follows, that the gentleman has a meaning other than that which the quoted words plainly convey,—he must mean that the planter cannot add to the mass of matter in the universe! Now this mass, he is no more "concerned with" than any other man; and no more pretends to control it than he does "to give pregnancy to the seed, or moisture to the clouds, or warmth to the sun." But he does pretend, by lending his powers, to assist the powers of nature---to modify by his labor, thus exercised, the soil which he cultivates, and the crops which he gathers into his barn! But the commodity when gathered---what is it? "Labor, immaterial, intangible labor, is the element of value, "says the gentleman," and the material commodity is merely the substruction, so to speak, in which that value inheres. How unreasonable then to speak of labor, as producing material values!"

It is plain in what way Mr. Rhett has been led to adopt so strange and obvious a fallacy! He has confined his view to one, and the most general signification of the term value, while the meaning best suited to discussions of this nature, has been kept studiously out of sight. Value in its most general sense means estimation, and here the term stands for an abstract indefinite idea: but its more specific meaning is *price;* in that sense it necessarily refers to some material standard, and in that sense political economists consider it. The value of this bale of cotton for example, is one hundred dollars! Now whether this value be inherent, or superincumbent, or in whatever way attached, or whether it will cease when the world is at an end, is of no earthly consequence, it is sufficient for the planter to know that without his labor it would never have existed, that it is *real*, and that while this social and political organization exists, it is inseparable from the product; which he can convert at will into the material substance, established by the consent of mankind, as its common standard! And besides the convictions of the planter, as to the reality of material value, the State assumes as much, in taxing the capital employed in growing this product, viz: the lands and negroes of the planter. On this property valued at a certain rate, a tax is levied and collected in material gold and silver, or their equivalents, by which it appears that the State, as well as the planter, considers material value as something more than an abstraction!!

In his anxiety to include the performers of "immaterial and intangible" *services* in the class of producers, Mr. Rhett is for resolving every thing into immateriality. "Value is immaterial," and cannot be identified with any material product," and labour is immaterial," and aptly enough I admit, may immaterial value be the offspring of immaterial labor. If he meant to say that the idea of value is immaterial, this would be true, but not to the point, as this and every other idea, even that of materiality itself, is immaterial, for an idea is nothing but an image, presented to the mental vision, and can have no ideality with the object imaged---whether it refer to an abstraction, like happiness, or to a sensible material thing, like one hundred ounces of silver having the stamp and superscription of the mint. But value, in the sense of price, refers necessarily, to some material object, as we have shewn, *and what must steadily be kept in view, the value in question, of which we have taken the bale of cotton as the exponent---would never have existed without the labor of the planter, be that labor material or immaterial!!* Now what beyond the assertion of Mr. Rhett have we to shew, that the labor concerned in the production of values is "immaterial." Is there no such thing as *bodily labor?* Is not *that* too an element of value? Is it not paid for with a price? So much gold for so much labor as will plough, ditch, or sow, so many acres of land? Are not the labors of agriculture in every stage, and throughout all its processes associated with matter organized or inert, and will the gentleman tell me there is *here* no material, no corporeal labor? What was the labor to which God condemned man, on his first transgression?---"*In the sweat of thy face shalt thou eat bread*, till thou return unto the ground!"

Behold in what a web of contradictions he has involved himself by his proneness to immateriality! Who is it that diffuses wealth, "an accumulation of values?" (page 708,) Who is it that uses wealth and value as convertible terms? (page 711,) Who is it that denounces "the abject idolatry of the times for material wealth?" yet denies there is such a thing as "material value?" It is the gentleman himself!

Will it be venturing too much to say, that we have annihilated the very foundations on which the gentleman builds his argument? But grant him his premises, for argument sake, they prove too much for his purpose, for instead of sustaining his maxim, (page 714,) "that all labor is alike productive," in other words, that other classes besides the agricultural are producers---they would prove that the planters themselves cannot be producers! for all the products being material, and there being no such thing as material value, the inevitable consequence is, that they can produce no value at all! A result, inconsistent with the fact, admitted elsewhere by the gentleman, and proved by what we have already advanced.

[TO BE CONTINUED.]

For the Southern Agriculturist.

ON THE IRRIGATION OF RICE LANDS.

Mr. Editor :—I have been desirous to obtain some machine to irregate rice lands: In furtherance of this object I wrote to Mr. J. Beare, Pall Mall East, London, the inventor of a Pump, said to combine many advantages. I propounded several questions concerning his pump, and I enclose you his reply. Some rice planters are situated on rivers, that in dry seasons become too salt at high water, to flow the land with, but which are fresh from half ebb to half flood tide. An efficient pumping apparatus would render lands in such situations as safe to plant, as those not having the evil of salt water to contend with. Inland swamps too might be drained or flowed at will. The only objection I see to the pump, (taking Mr. Beare's replies to be correct, which I do not doubt,) is the price. The quantity of water lifted per minute, would flow an acre six inches deep in twenty-four and a half minutes. If you could obtain any further information on this subject, you would perhaps benefit a number of rice planters by publishing it, at any rate you would one of your SUBSCRIBERS.

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7 Pall Mall East, London, 6th July, 1840.

Sir :—I have the favor of your letter under date, Savannah, (Geo.,) 15th May last, acquainting me that Capt. T. Baylis, of the British E. I. Army has conveyed to you an opinion, that my *new plan, or new principle* in pumps, must be extremely useful in irrigating rice lands.

You have submitted to me also a number of questions, and I have much pleasure in putting the same again under your notice, together with my replies thereto given seriatim, and which will, I think, be found perfectly clear and satisfactory.

I am very happy to learn that many rice plantations in your quarter of the world require to be improved and benefited in the way you point out, that much uncultivated land also may be brought into use, with a cheap and durable apparatus for irrigation and draining.

In the low lands throughout England, the patent pumps are getting into general use, and all the old methods are being fast laid aside. We are beginning now to experience a good continental demand, and have lately had with us a deputation from the King of Holland, to consult on the draining of the Haerlem Lake.

I am quite sure, if I can have the honor of a liberal correspondence with you, no doubt can exist, but a considerable number of our machines, both as pumps and as hydraulicans, will be readily and advantageously disposed of.

And if on the receipt of these my respects, you will indicate from the descriptions given, what machines shall be forwarded to you, at the same time favoring me with your remittances to any amount you may think proper, from £50 to £500, you may depend that the machinery shall be prepared and forwarded with the utmost care and attention, and that the prices charged for the same, shall be the very lowest possible, to insure the carrying out a liberal correspondence. Waiting the favor of your advices,

I am with respect, sir,

Your most obedient servant,

JOHN BEARE.

Ques. 1st. What quantity of water can be raised per minute from five to nine feet high, by a ten horse power steam engine driving a pump or pumps?

Ans. 1st. We are now working a pair of Hydraulicans under my patents, with a ten horse power steam engine, and this pair of pumps deliver at an altitude of eleven feet, twenty tons of water per minute, two hundred and ten imperial gallons to the ton, and a cubic foot of water being sixty-two and a quarter pounds, the stream produced by this pair of pumps when in full action, is nine feet wide and fourteen inches deep.

Q. 2d. Will it make a difference in the working of the pumps, if it be placed in tide water, which rises and falls six feet?

A. The effect of tide water is quite immaterial, otherwise than when the water is highest, the pumps will work the lightest.

Q. 3d. How many pumps, and what power will be necessary to raise seven hundred and thirty-five cubic feet of water per minute, from five to nine feet high?

A. Reckoning the cubic foot of water at sixty-two and a quarter pounds averdupois, and ten pounds being the imperial gallon, seven hundred and thirty-five cubic feet of water per minute will be equal to twenty-one tons, eighty-three gallons per minute. And as lifting from five to nine feet high only, is so much less than eleven feet, as stated in answer to query No. 1, a ten horse engine to this power lift, would give by the pair of pumps about nine hundred cubic feet, or twenty-six tons, one hundred and sixty-five gallons of water per minute.

Q. 4th. Will your Patent Pumps be less liable to injury from alternate cold and heat, moisture and dryness, than the pumps in ordinary use?

A. The Patent Hydraulicans can take no injury, if the working parts are kept well oiled.

Q. 5th. Can your pump, if it becomes damaged or worn by use, be repaired by mechanics, not particularly drilled to such work?

A. The Patent Pumps can be readily re-fitted by any one capable of handling a tool, requiring no nicety.

Q. 6th. What will be the price of a pump or pumps which will raise seven hundred and thirty-five cubic feet of water from five to nine feet high per minute ?

A. The price of a pair of Patent Hydraulicans, as set forth in answer to query No. 1, and to carry out the work therein stated, will be £265.

Q. 7th. Will either manual labour, horse power, or a wind mill be as cheap and effectual in working your pumps, as a steam engine ?

A. Cannot estimate the cost of manual labor with you. Wind is proved a bad motive-power for raising water, because of its uncertainty. And steam-power is contingent on price of fuel with you.

PRO FORMA.

A double action Patent Fountain Pump in cast iron, cast iron suction or breeches piece for five inch piping, with cast iron standard and wrought iron fire engine leverage, and wood cross pieces, having brass expresser buckets, with butterfly valves, leather connectors in metal rings, screw bolts, metal lower boxes and spindle valves, wrought iron rods, bolts, nuts, pins and keys, complete, to power No. 10*—£18 10d.

A double action Patent Fountain Pump in cast iron, as above, complete to power No. 8†—£26 10d.

A double action Patent Fountain Pump in cast iron, as above, complete to power No. 5‡—£35.

The above machines are built expressly for manual labour, they are very simple in their construction, but of course the labour, whether sharp or slow, will supply a larger or less delivery.

Power No. 10, double action, as above stated, at thirty strokes per minute, delivers five thousand four hundred gallons per hour, and at thirty-five strokes per minute, delivers six thousand three hundred gallons per hour.

Power No. 8, double action, at thirty strokes per minute, delivers nine thousand gallons per hour, and at thirty-five strokes per minute, delivers ten thousand five hundred gallons per hour.

Power No. 5, double action, at thirty strokes per minute, delivers twenty-one thousand six hundred gallons per hour, and at thirty-five strokes per minute, delivers twenty-five thousand two hundred gallons per hour.

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* This Engine will deliver, with a constant flow, about six thousand three hundred gallons per hour.

† This Engine will deliver, with a constant flow, about ten thousand five hundred gallons per hour.

‡ This Engine will deliver, with a constant flow, about twenty-five thousand two hundred gallons per hour.

SOILS AND MANURES.

REMARKS OF WILLIAM A. HAYES, ESQ., AT THE THIRD AGRICULTURAL MEETING AT BOSTON.

JUDGE HAYES began his remarks by expressing the pleasure he felt in meeting the farmers of Massachusetts; and though he did not anticipate on his coming to town, being called upon in this way, he was happy to encourage an object so valuable as that contemplated by these meetings, agricultural improvement, by giving an account of his own operations and the success which had attended them. Farmers constituted a common fraternity, and as their sole object was the improvement of this important art, whose interests involved the interests and comforts of every class in society, he should make no apology for speaking of plain matters in a plain way. This was the first time he had been called upon to address a meeting of farmers upon the subject of Agriculture, and he must therefore claim their indulgence. He had derived so much pleasure from reading heretofore the reports of these agricultural meetings, made by the Commissioner, that he felt it to be his duty when called upon, to contribute his part. * * * *

On the subject of the evening's discussion, Soils and Manures, he should give his views, founded upon long practice, as he had cultivated a farm under his own personal superintendence, for twenty-four years last past. Lands in good condition can easily be made better; while lands which are poor and exhausted, are with much difficulty raised up. Various substances may be applied, but the main dependence must be placed upon vegetable matter in and upon the soil. His first object, with a view to enrich his farm, is to collect vegetable matter for litter; leaves and straw, and waste substances of every description. He collects leaves even late in the spring, as litter for his styes. These seem to be small gatherings, but in the course of the season, where this habit of saving exists, the accumulations become very considerable. He is accustomed yearly to mow his pastures, and gather all the brakers and ferns and coarse grasses on which cattle will not feed. In this way his pastures are greatly improved. There is a better quality of grass comes in, and the quantity is much increased. He is accustomed, likewise, to mow his stubble grounds. He cuts the weeds and the old stubble close for litter for his stock, and he does not find that his grass is injured by this mowing. He thus collects a large quantity of vegetable waste, and uses in his barn a large basket, which will hold seven or eight bushels, to distribute it as litter to his stock. The great advantages of this management appear in the increase of his manure and the comfort and consequent thrift of his cattle.

He is in the habit of collecting large quantities of swamp mud, which he deposits in his barn-yard, to be trodden upon by his cattle, and he places large quantities in his hog-pens. He suffers this to remain through the summer, deeming it not advisable to turn it over. After keeping this through a winter and summer, he carries it out upon his land. He likewise casts soil into his yard, carries in a large amount of bog mud; the wash of the house, likewise is conveyed to the same place; and he has always swamp mud on hand to place in the yard, that the offensive liquids may be absorbed.—He uses lime, likewise, in his compost heap. For many years he has practised using from ten to thirty casks per year. He deems it most favorable to health, and as far as the uninterrupted health of a very numerous family may be considered a test in the case, the prudence and benefits of the practice are perfectly established.

A great object with him, and upon which he lays most emphatic stress, is the using of all the vegetable matter which he can collect or apply, for enriching his farm. He never carries his manure out in the fall; and he regrets his want of a manure cellar, as he thinks much would be gained by keeping the manure under cover. He does not deem it necessary that it should undergo a fermentation or decomposition before it is carried into the field. He applies twenty loads to the acre. He begins at one side of his field, and laying eight successive heaps in a row, at the distance of one rod apart, and the rows likewise one rod apart, it will require just twenty times eight heaps to dress an acre The distance at which the heaps should be placed apart, is ascertained with sufficient accuracy by taking the distance from the hind end of the cart to the forward feet of the cattle upon the tongue as the measurement of a rod in length. He ploughs his ground about six inches deep, carefully and completely inverting the sod. He seldom ploughs his manure under, excepting where he would raise tap-rooted vegetables; but having laid his land flat, he spreads his manure and then harrows it and cross harrows it until a fine tilth is produced. His corn is planted three and a half feet apart and is carefully hoed three times, without making any hill whatever; and he is careful to suffer no weeds to remain among it. It is suffered to stand in the field until perfectly ripe; and the stalks are not cut until the corn is so far advanced that there can be no advantage from them to the ripening of the ear. His butt stalks also are saved with great care; and when stowed away, his corn fodder being intermixed in alternate layers with wheat straw, the straw itself is rendered more nutritious and savory for his cattle. If he plants potatoes he is careful to plant whole potatoes and of a good size. The sprouts from such are stronger, and the crop is a fortnight earlier. The potatoes are hoed twice and the ground kept clear from weeds.

The second year the ground which has been in corn is not ploughed, nor the sod disturbed or reverted; but it is harrowed in both directions by the cultivator managed by one man with a horse.

The wheat is then sowed at the rate of two bushels to an acre, or barley or oats as he may choose, with grass seeds.

He has been in the habit of raising esculent roots for his stock, of the value of which as feed, he has a high estimation; mangel wurtzel, carrots, turnips, and ruta baga. He likes the ruta baga very much as feed for his horses. He planted last year two acres of carrots and ruta baga upon green sward, managed as he has said, and obtained one thousand bushels. Potatoes are sometimes made the second crop in the course. In that case his land has two manurings; and so with other esculent vegetable crops.

After haying, and even late in the autumn, he devotes much time and labor to the improvement of his lands. He carries sand on to clay lands, and clay on to sand lands, and finds much benefit from this intermixture of soil. He deems the principal advantage resulting from this process, to be upon land which he cannot plant, the covering up of all the vegetable matter on the soil, by which means it becomes rotted and improves the staple of the soil. This he deems a matter deserving particular attention; this covering up of vegetable matter and converting it into manure. He pursues this work even until late in the autumn, when the ground is frozen.

He obtains much swamp mud. He has extensive meadows, which have two and a half feet depth of mud resting upon blue clay. He has attempted the redemption of this land by digging a centre ditch three feet in width and two feet in depth, and cross ditches at right angles with the main ditch, and emptying into it. These cross ditches are two and a half feet wide at top, eighteen inches at the bottom and one foot in depth. They occur as often as once in two rods. After the ditching is completed, gravel or sand is carried on to the meadow at the rate of one hundred loads to the acre and manured. It is then sowed liberally with herds grass and clover. The ditches require to be cleared out once in three years, and the matter collected in them spread upon the land. In this way they may be kept in a good condition for an indefinite period of time. His own improvements in this way are of twelve years' duration and without deterioration.

In 1838, he undertook the redemption of four acres of this kind of land. He covered it with gravel, which was spread immediately. The next spring, when the ground was thawed to the depth of two or three inches, he harrowed it most thoroughly; he then sowed herds grass and followed it with a bush harrow. The crop of grass which he has since obtained from this land was at least two tons to the acre; and the moss in the land was completely decomposed.

He is accustomed to use alternately his pastures as mowing fields, and his mowing fields as pastures. He finds a very great advantage from this course of management. He ploughs his pastures, even though he has no manure to apply to them; and though he cannot fence them against his cattle. He inverts the sod, laying it completely over; and then sows his grass seed. In this way the

feed of his pastures is greatly improved both in quality and quantity. He ploughs his pastures, getting a crop of Indian corn and then laying down his land with Indian wheat and grass seeds. The Indian wheat, i. e. the Tartarian buck wheat, is deemed by him a good crop, and the flour much esteemed. When he has no manure to apply to the land, he ploughs it in a shallow manner; but, at any rate, it should be occasionally ploughed and sowed with grass seed.—*N. E. Farmer.*

MANURING IN THE HILL.

We did not fully answer the inquiry of our Correspondent I. A. W. of Cambridge, in our last week's paper.

He asks if our Corn-planter may not be used for planting when manure is put in the furrows or hill, which methods he prefers to spreading over the field.

For forty-five years we have been engaged in the labors of farming or in watching closely the labors of others in the same vocation. Farmers have ever been divided on the subject of manuring in the hill. And now we believe the great majority still continue the practice of putting a shovel full of fine manure in the hill, or of spreading some along in the furrow marked out for the seed.

When a man has been brought up to this mode we find he is loth to depart from it. He fears his corn will not find the manure unless it is put close to the seed. Many farmers tell us, Oh, it will do very well in your warm land to spread all the manure, broadcast, but it will not do on our cold and wet and heavy lands. Our answer is that cold and wet and heavy lands should not be planted with corn. Such lands are best for grass and potato and often for other roots—but corn can never be profitable raised in this part of the country on cold lands.

Corn is like an African and never suffers with excessive heat. But every farm has warm lands on it, and these should be selected for corn. If cold and wet land is planted with corn we admit its growth will be so slow at first, without manure in the hill, that its roots will not extend sufficiently to be benefited in due season by the spread manure. It should start more vigorously if we wish it to ripen in season.

By putting a handful of ashes, on each hill, *as soon as the corn is covered,* we never fail to start it sufficiently on a *green sward* furrow, in any case where the land is suited to the crop. When it is not green-sward, or the soil has not much vegetable matter in it to be rotted by means of the lie in the ashes, we receive no very essential benefit from this application, the lie has nothing to operate on, the other matter in ashes is too inconsiderable for a single handful to produce a sensible effect.

We are aware that corn looks prettier and larger in June when it has had a shovel full of fine manure in the hill, provided the worm can be kept asleep. And we admit the crop comes sooner to maturity when forced up in its first stages by this powerful incentive. Still there are the most serious objections to the application of manures in this manner.

If we count the extra labor of spreading and also putting in the hill, for both must be done or we often obtain more stalks than corn, —we shall find it costs us nearly double what it would to apply it in one mode only, for the labor of spreading forty loads on the acre is no greater than the spreading of twenty. The heaps are so nigh each other, the ground is covered by throwing it only half as far. So if we put it in the hill it is nearly as easy to put in a shovel full as a half shovel full.

But unless the whole soil is rich a shovel full in the hill will produce a large growth of stalks and but few ears. If the whole is rich then this large quantity is not wanted in the hill. If we have fifteen loads of fine manure we can spread this on the *surface* and commingle it completely with the soil of one acre, by means of the harrow —this is less labor than laying it out in the hill, and the roots will get a portion of it immediately, and as they extend they will find it all.

Thus in almost all cases—and we have watched a thousand fields —we get a better harvest by spreading on than by putting in the hill. A trifle in the hill does no injury, but a shovel full is often a harbor for worms that get hold before the roots are large enough to protect themselves.

When all are agreed that for future crops the land is far better prepared in our mode than in the other, should we have no regard to the permanent improvement of the soil? In many towns near Boston, we plant our lands with a view, principally, to preparing them for grass again, and for grass—a far more profitable crop— we never want our manure to be left in hills or heaps. We want it to be incorporated with the soil.

If Mr. W. should spread his fine manure along in the furrow—a better mode than putting in the hill—he might possibly use his Cornplanter to advantage, though we doubt it.

We hope he will plant at least a small patch next summer in our mode, and we promise to come at short notice and show him how to hold the Planter.—*Boston Cultivator.*

PREPARATION OF SEED CORN.

To the Editors of the Albany Cultivator:—I send you the result of an experiment made in planting corn the past season. Having seen statements of the benefits derived from steeping the seed in a solution of the sulphate of iron (copperas,) as securing it against the ravages of birds and cut-worms, we resolved upon giving it a trial. Mr. Jacob Kirk, (with whose crop the experiment was tried,) procured a few ounces, dissolved it in hot water, and poured over the corn. After remaining in the solution from six to eight hours, the corn was taken out, rolled thoroughly in plaster, and planted. A few rows of the same kind of corn was planted in the middle of the field, without steeping the seed, but just as it came from the cob. The field was likewise planted with pumpkin seed, also without preparation. After the corn and pumpkins had come up, I observed that many of the latter were cut off by the worms, but could not see a single stalk of corn disturbed, until I examined the rows (for I had marked them,) the seed of which had not been prepared.—Here I found the worms at work, nearly a tenth part of which they had destroyed: the birds had likewise taken some. The steeped corn was of a greener and more healthy color than the other; grew faster, with stouter stalks, while that from the unprepared seed could readily be pointed out by its more yellow and dwindling appearance; neither was the yield so great as the other.

Now whether this difference in yield is to be attributed to the copperas or the plaster, or to both, I have yet to learn; but think the copperas prevented the birds and worms from committing depredations, as we have frequently rolled seed corn in plaster, but have never found *that* a security against either birds or worms.

The above is at your service: you will please pardon errors in composition, as my province is behind the plough and not the pen.

Yours, R. FOSTER.

INJURIOUS EFFECTS OF WEEDS.

The question has been asked, how it was possible for China and Japan, with the ordinary products of agriculture, to furnish bread for a population, equaling, according to the latest census, about three hundred persons to a square mile. The answer is to be found in the care with which every foot of ground is cultivated; in the fact that few animals are kept, either for labor or food; and more perhaps than any thing else, in the entire freedom of the crops from every thing that can reduce their quantity or quality. Not a weed of any kind is to be found in the fields, and the most positive enactments

and most assiduous attentions are directed to keeping the country free from them.

Few are aware how much weeds, or grasses, growing in a grain crop, detract from its value, by lessening the product. A vigorous root of charlock or thistle will draw from the earth the nutriment that would have given fulness to half a dozen ears of wheat; and where these or any other foreign substance is permitted in a growing crop, that is sure to suffer in proportion to the quantity of the foul material present. Weeds injure a crop in two ways; by the room they occupy, to the exclusion of the valuable plants, and by the nutriment of which they rob the growing crop. We have seen fields in which the wheat maintained a dubious struggle with the red root, charlock, or thistle; and where the stem and the ear both showed how much they needed to be relieved from such crowding and unwelcome neighbors. On the best cultivated farms of England or Belgium, not a plant or weed of any description can be found in a growing crop; and in some years the Earl of Leicester has offered a reward, but without success, for the smallest or any weed that could be found in hundreds of acres of his turnips, or his wheat.

In this country, but few experiments have been made to show the difference of product between clean and foul fields, but several are recorded in Sinclair's Code of Agriculture, some of which we shall give, to call the attention of farmers to this point, and show that the labor expended in clearing fields or crops from weeds, is far from being lost, as many would seem from their negligence in the matter, to suppose.

"1. Wheat.—Seven acres of light gravelly land were mowed, and sown broad-cast; one acre was measured off, and not a weed was pulled out of it; the other six were carefully weeded. The unweeded acre produced eighteen bushels; the six weeded acres one hundred and thirty-five bushels, or twenty-two and a half bushels per acre; which is four and a half bushels, or one fourth of the whole, in favor of weeding.

"2. *Barley.*—A six acre field was sown with barley, in fine tilth, and well manured. The weeding, owing to a great abundance of charlock, cost twelve shillings per acre. The produce of an unweeded acre was only thirteen bushels; of the weeded twenty-eight. Difference in favor of the weeding, fifteen bushels per acre, besides the land being so much cleaner for succeeding crops.

"3. *Oats.*—Six acres were sown with oats; one acre ploughed but once and unmanured, produce only seventeen bushels. Another six acres ploughed three times, manured and weeded, produced thirty-seven bushels per acre. This experiment proves that oats require good management, and will pay for it, as well as other crops. Ten bushels of the increased produce may be fairly attributed to the weeding, and the other ten to the manure."

It is admitted that the labor and expense of weeding a crop is considerable; but if the difference be such as is here stated, and there is no reason to doubt it, as it is abundantly corroborated by other experiments, then it should be more generally and promptly attended to than it is. If our farmers could raise four and a half bushels of wheat, fifteen of barley, or ten of oats, additional to their usual crop per acre, the effect would at once be felt in every department of labor in our country. No one can travel through our country before harvest time, without being convinced that millions of acres might have their products increased in as great a ratio as the above, by entire freedom from weeds. Farmers would be gratified could they have their lands tax free; but experience shows, that to have them *weed free*, would be of far greater importance to them.—*Cultivator.*

SOAP SUDS.

The value of this article as stimulant of vegetable life, appears not to be generally and fully appreciated by our farmers, as their intelligence and well known habits of enterprise and economy would lead us to expect.

But few, comparatively speaking, appear to be sensible of the almost inestimable advantages which a careful preservation of this invaluable liquid and its application to the purposes of vegetable nutriment, would enable them to secure. It has been estimated by judicious and enlightened farmers, that a hogshead of suds, is equal in point of value, to a cord of the best manure; and I am certain that no one who has witnessed the beneficial effects consequect upon its application, will deny that it is *bad policy* and no mark of a judicious and discriminating farmer to suffer it to be thrown away.

In a state of incipient putridity, it is replete with the aliment of vegetables in a state of actual and perfect solution. The only condition, indeed, so far as our knowledge extends, in which it is susceptible of peing appropriated and absorbed by plants. Besides its important value in this respect, it is also possessed of the most powerful and efficacious anthelminthic properties; and when used in the irrigation of fields and gardens infested with worms, is found to be a speedy and effectual remedy against their ravages as well as those of most of the alligerous depredators by which the plants, vines, &c. of the latter, although protected with the utmost care and vigilance of the husbandman, are so frequently blasted and destroyed.

There is also another important use to which this liquid may be profitably applied. I refer to the formation of *Compost Manures*, which every one who is at all familiar with the present condition

of our husbandry, will readily admit to be one of the most decidedly important operations in which it is possible for our famers to engage.

By a little attention to this subject, on the part of our farmers, the annual produce of our country might be greatly increased, and the productive powers of many of our farms, which are now deemed almost worthless, be so far resuscitated as to place them on an equal footing, in this important respect, with the most productive farms of the south-west. Nature has every where supplied us with the most ample means for accomplishing this end, and we have only to improve them to reap a rich and plentiful reward.

EXPERIMENTALIST.

LIME AND ITS APPLICATION.

To the Editors of the New Genesee Farmer :—Having read some paragraphs in both the Old and New Genesee Farmer on the subject of applying lime to the soil, but having seen none which agrees with the manner in which I was, in early life, used to seeing it applied,—I will give you a brief statement, should any of your numerous readers think it worth a trial.

For wheat, we used to consider it best to have it drawn and prepared some two or three months before its application. The manner of preparing, thus :—Plough round your inclosure intended for wheat, say six or eight furrows, (it will be better drawn out in the field than left for brush and briers to grow in.) Along the centre of these furrows put your lime, and cover it with earth six or eight inches thick. If the weather is moist, two or three days will dissolve it to powder, when it should be thoroughly mixed with the soil that is around it, by means of a hoe, and drawn up in a conical shape, when, if it is thoroughly dissolved, (which it should be before mixing,) it will receive no injury from the weather. It is not likely that there would be enough to go over the whole. Then the centre of the field might be ploughed, say two furrows each way, and heaps thrown up at suitable distances for spreading. prepared in the same way. The writer has seen swamp muck, road soil, &c., prepared in this way, and attended with very beneficial results.

For spring crops, the lime was drawn in the early part of the spring, and the heaps made at suitable distances for spreading, by throwing two or more furrows against each other and the lime allowed to dissolve in the same manner; but in no case spreading it before it was well mixed with the soil with which it was covered. This was the manner of applying lime to the soil in the west of England twenty years since.

Yours respectfully, A SUBSCRIBER.

Erie County. January, 1841.

UTILITY OF SELECT SEEDS.

Mr. GAYLOR, in the Albany Cultivator very justly remarks, "that the seed that ripens first in the ear, and is separated with the greatest ease, is the most proper for seed, as these circumstances show it is the most mature. A farmer in one of the Northern States a few years since, was in the habit of selling large quantities of seed wheat annually and at high prices, as his wheat was of a superior quality, very heavy and productive, and supposed to be a new variety. It appeared however, that he had brought his wheat to that degree of perfection, by selecting some of the finest heads from a field in the first place, and then instead of threshing the whole crop, and using the seed promisouously, he generally beat the sheaves over a barrel, by which only the best and most perfect grains were separated, and by repeated sowings had rendered the qualities so desirable, permanent."

It is reasonable to believe that every kind of seed may be improved by a similar process of selection.

For the Southern Agriculturist.

ANALYSIS OF PRAIRIE SOILS, FROM MONTGOMERY COUNTY, (ALA.)

BY PROFESSOR SHEPARD.

Mr. Editor:—Three specimens of prairie soil were brought to me for examination by Dr. C. Bellinger, of Alabama. They were taken from a plantation seven or eight miles in a south-easterly direction from the town of Montgomery.

No. 1. is a fine black mould from timbered land, which was situated rather low. It produces cotton to advantage when the season proves dry, and is well adapted to other crops, whether the summer is dry or wet. It varies in depth from six feet to one inch.

No. 2. is a fine snuff-colored soil, and is the best land for cotton in the country. Small grain (oats, wheat, and rye,) and corn sometimes do well upon it also; but it is less suitable for these crops than No. 1. It varies in depth from one inch to ten feet.

No. 3. This soil is called "Bald Prairie." In color it is grayish white, with a slight tinge of yellow, or fawn. It coheres into small lumps, which are variegated from the presence of white calcareous spots,—the remains of shells. It is considered as poor land, though it answers for small grain and grasses tolerably well. It is not adapted to the cotton crop.

No. 3. forms the underlie of No. 1 and No. 2, and is itself found resting upon the "rotten limestone."

Equal weights of the above soils were thoroughly humected with pure water, when their weights had increased from 100 to

177 - - - - - - - - - - in No. 1.
157 - - - - - - - - - - in No. 2.
162 - - - - - - - - - - in No. 3.

After drying for 48 hours in a room, at 70°, their weight were as follows:—

101.7 - - - - - - - - - in No. 1.
101.5 - - - - - - - - - in No. 2.
102.0 - - - - - - - - - in No. 3.

No. 1. in drying at a temperature of about 320°, lost 8.8 p. c. of water; after which it was ignited until all organic matter present was dissipated: the additional loss thus accruing was 16 p. c. The alumina, carbonate of lime and siliceous ingredients were then determined as usual. The result of which inquiry, gave in the hundred parts of earthy matters, as follows:—

Alumina with peroxide of iron, - - - - - - - 12
Carbonate of lime, - - - - - - - - - - - 10
Insoluble silica (or fine sand,) - - - - - - - - 78

100.0

No. 2.—

Water of absorption, - - - - - - - - - 6 p. c.
Organic matter, - - - - - - - - - - 8 p. c.

The proportions among the mineral constituents were as follows:—

Alumina and oxide of iron, - - - - - - - 8.
Carbonate of lime, - - - - - - - - - - 7.7
Insoluble (fine sand,) - - - - - - - - 85.5

101.2

No. 3.—

Water of absorption, - - - - - - - - - 7 p. c.
Organic matter, - - - - - - - - - - 5 p. c.
Carbonate of Lime, - - - - - - - - - 35 p. c.

I did not determine the proportions of alumina and silica, presuming that their ingredients have to each other a ratio similar to that found in Nos. 1 and 2.

The iron in this soil is partly in the condition of a carbonate of the protoxide, in place of being a hydrated peroxide, as in Nos. 1 and 2.

Charleston, (S. C.) March 19th, 1841.

STATISTICS OF SOUTH-CAROLINA.

We derive the following information relative to the Mineral, Commercial, Manufacturing, and other resources of our State, from the schedule thereof, annexed to the late census of the population of the State, for the year 1840, taken in conformity with the Act of Congress, under the direction of Thomas D. Condy, Esq., Marshal of the District of South-Carolina.

1.—MINES.

1. Iron.—1 *Cast Iron.* Furnaces, 4; tons produced, 1,250. 2. *Bar Iron.* Bloomeries, Forges, Rolling Mills, 9. Tons produced, 1,165. 3. Tons of Fuel consumed, 6,354. Men employed, including mining operations, 248. Capital, $113,300. 2. Gold.—Smelting Houses, 5. Value produced, $36,418. Men employed, 69. Capital $40,000. 3. Salt.—Bushels produced, 2250. Men employed, 7. Capital $1,500. 4. *Granite, Marble, and other Stone.* Value produced, $3,000. Men employed, 4. Capital, $500.

2.—AGRICULTURE.

1. Live Stock. Horses and Mules, 130,826. Neat Cattle, 573,840. Sheep, 232,664. Swine, 888 513. Poultry of all kinds, estimated value, $590,594. 2. Cereal Grains. Number of bushels—Wheat, 705,925. Barley 3,967, Oats 1,446,158, Rye 44,530, Buckwheat 72, Indian Corn 14,721,585. 3. Various Crops. Pounds of Wool, 289,202. Pounds of Hops, 93. Pounds of Wax, 15,857. Bushels of Potatoes, 2,677,713. Tons of Hay, 20,008. Tons of Hemp and Flax 35. Pounds of Tobacco 51,518. Pounds of Rice 59,929,671. 4. Cotton, Sugar, Silk, &c. Pounds of Cotton, 148,907,880. Pounds of Silk Coocoons, 2,210. Pounds of Sugar 30,000. Cords of Wood sold, 161,461. Value of Products of the Dairy, $577,849. Of products of the Orchard, $52,275. Gallons of Wine, 643. Value of home made, or Family Goods, $1,219,442.

3.—HORTICULTURE.

Gardens and Nurseries.—Value of products of Market Gardeners, $38,180. Of products of Nurseries and Florists, $2,139, Men employed, 1,059. Capital, $201,990.

4.—COMMERCE.

1. Commercial Houses in Foreign Trade, 29. 2. Commission Houses 41. Capital, $3,600,050. 3. Retail Dry Goods, Grocery, and other Stores, 1,262. Capital $6,600,636. 4. Lumber Yards and Trade, 17. Capital $110,000. Men employed, 1,029. Internal Transportation—men employed, 143. 6 Butchers, Packers, &c.—men employed, 46. Capital, $112,900.

5.—FISHERIES.

Barrels Pickled Fish, 425. Men employed 53. Capital $1,617.

6.—PRODUCTS OF THE FOREST.

Value of Lumber, $504,884. Barrels of Tar, Pitch, Turpentine Rosin, 735. Value of Skins and Furs, $1,225. Value of Ginseng and all other products of the Forest, $9,247. Men employed, 508.

7.—MANUFACTURES.

1. Machinery. Value manufactured, $65,561. Men employed, 127. 2. Hardware, Cutlery, &c. Value manufactured, $13,465. Men employed, 26. 3. Small Arms. Number made, 167. Men employed, 7. 4. Precious Metals. Value manufactured, $3,000. Men employed, 4. 5. Bricks and Lime. Value manufactured, $263,060. Men employed 1,283. Capital invested in preceding manufactures, $122,445. 6. Wool. Fulling Mills, 3. Value manufactured, $1,000, Persons employed, 6. Capital $4,300. 7. Cotton. Manufactories, 15. Spindles, 16,355. Value manufactured 359,000. Persons employed, 569. Capital, $617,450. Silk. Pounds reeled, thrown, or other Silk made, 46. Value of the same, $380. Males employed, 1. Females 3. Capital, $50. 9. Mixed Manufactories. Value of Produce $2,450. Persons employed, 9. 10. Tobacco. Value manufactured, $3,500. Persons employed, 7.

Capital $5,000. 11. HATS, CAPS, BONNETS, &c. Value manufactured, $17,250. Persons employed, 20. Capital, $315. 12. LEATHER, TANNERIES, SADLERIES, &c. Number of Tanneries, 839. Sides of Sole Leather Tanned, 71,463. Sides of Upper Leather Tanned, 94,896. Men employed, 1,040. Capital, $239,020. All other Manufactories of Leather, Saddleries, &c. 242. Value manufactured, $109,472. Capital, $46,162. 13. SOAP AND CANDLES. Pounds of Soap, 586,329. Pounds of Tallow Candles, 67,972. Men employed, 168. Capital $300. 14. DISTILLED AND FERMENTED LIQUORS. Distilleries 258. Gallons 102,288. Men employed 219. Capital $14,442. 15. DRUGS AND MEDICINES, PAINTS AND DYES. Value $4,105. Men employed 6. Capital $2,100. 16. EARTHENWARE, &c. Potteries 8. Value manufactured $19,300. Men employed 49. Capital $12,950. 17. SUGAR REFINERIES, &c. Value of Confectionary made $29,333. Men employed 112. Capital $87,200. 18. PAPER. Manufactories 1. Value of Product, $20,000. Men employed 30. Capital $30,000 19. PRINTING AND BINDING. Printing Offices 16. Binderies 7 Daily Newspapers 3 Weekly Newspapers 10. Semi and tri-weekly Newspapers 2. Periodicals 4. Men employed 164. Capital $131,300. 20. CARRIAGES AND WAGONS. Value Manufactured $210,510. Men employed 420. Capital $130,485. Mills. Flouring Mills 164. Barrels of Flour 86,580. Grist Mills, 1,374. Saw Mills 735. Oil Mills 19. Value manufactured $992,106. Men employed 3,258. Capital $1,655,754. 21. SHIPS AND FURNITURE. Value of Ships and Vessels built $60,000. Value of Furniture manufactured $28,175, Men employed 241. Capital $133,600. 22. HOUSES. Brick and Stone Houses built 111. Wooden Houses built 1,594 Men employed 2,388. Value of constructing or building $1,528,576. 23. ALL OTHER MANUFACTURES NOT ENUMERATED. Value manufactured $84,978. Capital $46,442.—TOTAL CAPITAL INVESTED IN MANUFACTURES $3,275,793.*

STATISTICS OF CHARLESTON DISTRICT, FOR 1840.

1. AGRICULTURE.—1. *Live Stock.* Horses and Mules 4,218. Neat Cattle 3,660. Sheep 11,366. Swine 17,438. Value of Poultry $38,493. 2. *Cereal Grains.* Bushels —Wheat 50 Oats 120,252. Rye 521. Indian Corn 396,151. 3. *Various Crops.* Pounds—Wool 13,535. Wax 863. Bushels of Potatoes 619,407. Tons of Hay 2,156. Pounds of Rice 11,180,750. 4. *Cotton, Sugar, Silk, &c.* Pounds—Cotton 3,859,233. Silk Cocoons 500. Sugar 30,080. Cords of Wood sold 15,875. Value of products of the Dairy 1,345 Value of home made or family goods, 1,210.

2. HORTICULTURE.—*Gardens and Nurseries.* Value of produce of Market Gardeners $30,390. Value of produce of Nurseries and Florists $3,000. Men employed 1,057. Capital $210.960.

3. COMMERCE.—Commercial Houses in foreign trade 27. Commission Houses 34. Capital $3,563,750. Retail Dry Goods, Grocery and other stores 582. Capital $3,575,100. Lumber Yards and Trade 10. Capital $85,000. Men employed 684. Internal transportation—men employed 57. Butchers, Packers, &c.; 37. Capital $110,000.

4. PRODUCTS OF THE FOREST.—Value of Lumber $300.

5. MANUFACTURES.—1. *Bricks and Lime.* Value manufactured $113,890. Men employed 420. Capital $95,330. 2. *Tobacco.* Value manufactured $3,500. Persons emyloyed 7. Capital $5,000. 3. *Leather, Tanneries, Sadleries, &c.* Tanneries 5. Sides of Sole Leather tanned, 3,900. Sides of Upper Leather tanned, 15,750. Men employed 43. Capital $57,500. All other manufactories of Leather, Saddleries, &c. Value manufactured $10,000. Capital $7,000. 4. *Sugar Refineries,* &c. Value of Confectionary made, 28,083 dollars. Men employed 109. Capital 86,500 dollars. 5. *Printing and Binding.* Printing Offices 8. Binderies 5. Daily Newspapers 3. Weekly Newspapers 3. Semi and tri-weekly Newspapers 2. Periodicals 4. Men employed 140. Capital 120.000 dollars. 6. *Carringes and Waggons.* Value manufactured 7,000 dollors. Men employed 54. Capital 91,200 dollars. 7. *Mills.* Flouring Mills 3. Barrels of Flour 3,865. Grist Mills 17. Saw Mills 21. Value of manufactures 363,300 dollars. Men employed 216. Capital 563,000 dollars. 8. *Ships and Furniture.* Value of Ships and Vessels built 60,000. Value of Furniture manufactured 10,000 dollars. Men employed 207. Capital 130,000 dollars. 9. *Houses.* Brick and Stone Houses built 94. Wooden Houses built 53. Men employed 908. Value of constructing or building 1,059,200. Total capital invested in manufactures 1,155,630. 10. *Minerals.* Domestic Salt, bushels 400.—*Charleston Courier.*

* The returns of Manufacturing Capital are by no means complete.

TEN MINUTES' ADVICE TO LABOURERS.

The following extracts are from a little sixpenny pamphlet, called "Ten Minutes' Advice to Labourers." Although intended for England, the advice contained in it may be useful to many in the United States. [Ed. So. Agr.

HEALTH.

Health is universally allowed to be one of the greatest of blessings, and yet how little attention is paid to the preservation of it. Sickness is a great evil to every person, but it is a most dreadful one to the poor man, whose subsistence depends upon his labour. A most lamentable ignorance upon this subject prevails, both amongst the rich and the poor. They are little aware how many thousand lives might be saved, how many painful diseases might be averted, how much unnecessary expense avoided, by a very slight knowledge of medicine; such a knowledge as may easily be acquired by a person in the most humble condition of life. When I say this, I by no means wish you to suppose that you can always doctor yourselves, far from it; the knowledge which I allude to, will show you the necessity of calling in a medical man, and in time, before the disorder has made such progress as often to render his assistance of little or no use. The old saying, "a stitch in time saves nine," is particularly applicable to diseases, as in the very beginning of a disorder, a cure may possibly be made with very little medicine or confinement; but should it be neglected for only a day or two, the most serious consequences in some cases might follow, and at any rate, more than twice the confinement and quantity of medicine would be required to get rid of it.

PREVENTION BETTER THAN CURE.

A great number of bad disorders arise from checked perspiration, and might be prevented by timely care. If a person perspiring freely gets wet, or stands in a draught of cold air, or lies down on the damp ground, or drinks cold water, he runs a great risk of seriously injuring his health; and the more relaxed and weaker he is from his work, or any other cause, the greater will be his danger. Now it is often in his power to avoid this danger. When wet he should keep moving about briskly, and never sit in his damp clothes if he can help it. They should be changed the very first opportunity. If a person be much heated, there is seldom a necessity for his standing still in a cold current of air; much less for his lying down, especially sleeping on the damp ground. Should he however have done these things from imprudence or necessity and feel chilly, and as if he had caught cold, let him get into a perspiration as soon as possible, and keep it up for ten minutes or a

quarter of an hour. This may be done by rubbing himself well with a coarse towel before a fire, or using any other exercise which will make him perspire freely. He must then wipe himself quite dry, and if near bed time, take a quantity of weak warm tea, or, what is better, a treacle posset, just as he is going into bed. The sooner a person gets into a perspiration after feeling the least unwell from its being checked, the more certain will he be to avoid catching a cold or fever.

Whenever a labourer, especially an elderly man or woman, has been exposed to much wet and cold, it would be very advisable for them, even though they felt well at the time, to rub their bodies and limbs with a flesh brush or coarse flannel before going to bed. It would often save them from a rheumatic attack.

A man may also avoid, when hot, drinking large draughts of cold water: the temptation is certainly great, but when he is aware there is much danger in doing it, and that his thirst will be only quenched for a moment, the temptation will be very much lessened; besides, nearly the same end will be gained by washing the mouth and throat with water, or he may drink about a wine-glass full, and after a minute or two drink another, which will seldom hurt him, especially if he works soon after taking it. Some persons will probably say, we have often been exposed to wet and cold, have laid down on the damp ground, and have drank cold water when we were hot without suffering any illness, and therefore we don't see any use in taking these precautions: it is very true that many have not been so injured, but it is equally true that many have been made seriously ill, and that many also have died from these causes. Besides, it is well known that the same men who have been fortunate enough at one time to escape illness from exposure to wet, &c., have at another lost their lives from it: and when it is considered of what vast importance health is to a poor man, common sense shows the necessity of his taking every means in his power to preserve it. Again, many diseases might be prevented by proper attention to the state of the bowels: they ought to be moved once a day; but if two days pass without a motion, some opening medicine ought to be taken. That intemperance in eating and drinking will bring on ill health, is well known; but there is also such a thing as intemperance in work: it is not unusual, especially in harvest time, for men tempted by high wages to do a great deal of work in a very short time, thus overstraining the powers of nature;—this is being penny wise and pound foolish; for it frequently happens that they remain in a weakly state for some months after this over exertion, and in some instances the constitution has never recovered from its ill effects. Another precaution is also a very useful one, which is, never to go into a very warm room, or close up to a fire immediately after being long exposed to severe cold.

FEVERISH COLD.

This usually arises from checked perspiration. When a cold is accompanied by fever, *immediate* attention ought to be paid to it. The usual signs of FEVER are cold shiverings, especially down the back, pains in the limbs, head-ache, and sometimes sore throat. When the patient gets to bed he feels very hot, and his skin is quite dry; his pulse beats much quicker than usual. He is unable to sleep, or if he does, he soon wakes again in a heated and unrefreshed state. Under such circumstances, *no time should be lost;* let him get up *immediately* and take three* opening pills, then put his feet for a quarter of an hour into warm, but not hot, water; and if the water feels chilly before it is time to take his feet out of it, he should put a little more hot water into the pail; he must then wipe his feet quite dry, get into a warm bed, and drink very freely of warm weak tea, thin gruel, or barley water. Let him then take twenty drops of tartarised antimonial wine, every four hours during the night, which we will suppose to be Monday night; the next day, Tuesday, after the opening medicine has done acting, he may continue taking twenty drops† of the tartarised antimonial wine every four hours in a little water. He must also carefully abstain from spirits, beer, cheese, meat, or broth, and take nothing but tea and toast, gruel, sago, or barley water. He should confine himself to the house, and particularly avoid all cold draughts of air; the great object being to produce perspiration, which had before been checked. By using these early precautions, the patient will most likely feel himself very much better on the Tuesday night, and sleep well, and be able to return to his work on Wednesday morning. If, however, he should feel again heated, with cold shivers occasionally, and unable to sleep, let him continue the antimonial wine every four hours, as he did on the Monday night, and send by all means the next morning for the doctor, if he does not find himself very considerably better.

COUGH.

A person having caught cold, is frequently troubled with a cough. This, in general, will cease in a few days time, and if he feels pretty well, and has little or no pain in his breast when he coughs, he may go about his work as usual. His cough will be relieved by taking one of the cough pills every four hours‡, and sucking a little Spanish juice occasionally; but if he have symptoms of fever, and pain

* Two will be sufficient for a woman. If the patient should be *very* ill and a doctor cannot be got in time, let him take *two* of the calomel pills *instead* of these opening pills, and the next morning a large tea-spoonful of Epsom salts, dissolved in water.

† Always drop medicines into a tea-spoon, and then if you should put more in than you intended, and which will now and then happen, they can be poured back into the bottle and you can begin again.

‡ In case the pills should render his bowels costive, he must keep them properly open with Epsom salts.

and soreness in his chest, the patient should take two or three of the opening pills at night, drink plentifully of warm weak tea or gruel on going to bed, and then take a small tea-spoonful of paregoric elixir, with twenty drops of antimonial wine. This dose may be repeated in six or eight hours, and the same plan pursued on the following day. He must observe the same diet as recommended under the article, "Feverish Cold," carefully abstaining from meat, fermented liquor, &c.—Small mustard plasters, the size of a crown piece, are often useful in removing a teazing cough. One should be applied on the chest, keeping it closely pressed down for ten minutes or a quarter of an hour, and then apply three or four more in succession on different parts of the breast. If the pain in his breast be not removed by these means, and the cough no better in two or three days' time, medical advice ought to be had, as more persons have died of neglected coughs, than almost any other disorders.

How common is it to see a man, who has had a bad cough upon him for a length of time, daily exposing himself to wet and cold, and thus seriously increasing his complaint. On being told of his imprudence, he would probably say, What can I do, Sir? I cannot afford to lay up and neglect my business. The answer to this is, you had infinitely better cease working for a week or ten days, than be laid up for months, and perhaps lose your life at last. No doubt the poor man would also be of this opinion, if he were only fully aware of the risk he runs by neglecting a bad cough.

Delicate persons subject to a cough, will often find benefit from wearing a burgundy pitch plaister on the breast or back, during the cold months.

PAIN IN THE STOMACH.

A person is sometimes seized with a violent pain in the stomach and bowels, attended with purging and sickness. The pain often does not continue, but comes on very severely every now and then. The patient should *immediately* take twenty grains of powdered rhubarb, fifteen grains of carbonate of soda, and five grains of powdered ginger, in peppermint water, and if he soon throws it up, let the dose be repeated. After four or five loose motions, but *not before*, if the pain be not relieved, let him take twelve drops of laudanum in a little cinnamon water, or in a table-spoonful of brandy mixed with three table-spoonfuls of boiling hot water, or in hot water alone, if no brandy can be got. Should this not do him good in an hour's time, and he continue to have pain and loose motions, he may take ten or more drops of laudanum in a little peppermint water. If he is not much better in two hours after taking this last dose, he must send for a doctor. Many people imagine that a purging for two or three days will do them a great deal of good; this is a very great mistake. Violent purging, lasting for above ten or

twelve hours, will be very injurious to them, and ought to be checked as soon as possible. If a patient is seized with sickness and a very violent fixed pain in the bowels, which remain quite costive, and are tender upon pressure, let him without loss of time send for a medical man, as there is reason to apprehend inflammation of the bowels, which is a most dangerous disorder, and if not quickly relieved, will, in a very short time end in death. In case a doctor cannot be got in three or four hours' time, two table spoonfuls of castor oil should be given, and a large warm poultice applied all over the bowels.

List of Drugs and Medicines, useful to be kept in a labourer's cottage, with their prices and proper quantities to be ordered from the druggist:—

	s.	*d.*
Epsom Salts, two pounds,	1	0
Best Rhubarb, powdered, one ounce,	1	0
Paregoric Elixir, two ounces,	0	6
Laudanum, one dram,	0	1
Ginger, powdered, half an ounce,	0	2
Tartarised Antimonial Wine, two ounces,	0	6
Ipecacuanha Wine, one ounce,	0	6
Carbonate of Soda, two ounces,	0	4
Peppermint Water, best, one quart,	1	0
Cold-drawn Castor Oil, two ounces,	0	8
Diachylon Plaster, a quarter of a yard,	0	5
Camphorated Oil, two ounces,	0	8

Opening Pills.—Barbadoes Aloes, 1 dram; Scammony Powder, 24 grains; Spanish Soap, 12 grains; Oil of Carroways, 4 minims. Mix and maketwenty-four pills. Two or three to be taken at bed time.

Cough Pills.—Ipecacuanha powder, 12 grains; Powdered Opium 3 grains. Mix and make eighteen pills, one to be taken at night, another in the morning before breakfast, and two more in the course of the day. They should be continued for two or three days. These are very useful pills when there is no fever.

Calomel Pills.—A labourer may order from a druggist a little box, containing twelve pills, each pill consisting of two grains. Two or three of these pills taken when a person is in a violent fever, are extremely useful; but the pill-box must be carefully locked up.—See Art. "Feverish Cold."

ICE HOUSES.

THERE is an indifferent, good, better, and best way of doing every thing; and judging from the success of ice keepers, we should suppose the best mode of constructing ice houses had not been uniformly adopted in this country. It is very often the case that ice is not kept beyond midsummer. This is owing, in every instance, to the want of requisite information in building houses of materials which are not too great conductors of heat. In beginning to build, it is not only necessary to "count the cost," but it is very important for every one to ask himself what he wishes to accomplish before he commences, lest his labor be lost. The common plan is, to dig in the earth some eight or ten feet, and build a house from the bottom extending from four to ten feet above the surface. The earth and all the materials, on this plan, are too swift conductors of heat to completely secure the ice. The better plan is, to construct a building entirely above ground. One house should be built in another, the walls being about eighteen or twenty inches asunder, and this space filled with pulverised charcoal or tan bark. The floor should be filled with sand some twelve or fifteen inches, and a layer of tan thrown over it to the depth of a few inches. This kind of floor will completely absorb the moisture and keep the air dry. Rye-straw makes an excellent roof. The room should not be less than eighteen feet square in the clear.—*Ten. Agriculturist.*

EXCHANGE AND COTTON TRADE BETWEEN ENGLAND AND THE UNITED STATES.

WE have received from the author, Mr. J. F. Entz, merchant of this city, a book under this title, which contains a mass of valuable information, not only for the shipper of cotton, but also for the Planter and for all those who have interest in the great staple product.

This work shows at a glance what cotton stands at in Liverpool, at no matter what price, rate of freight or exchange, the calculations being made for both the upland and sea island cotton. It also enables us to see in the easiest manner, how the English prices correspond with ours, or what a sale at Liverpool would nett at the then ruling rates.

Mr. Entz is a practical merchant, and his calculations are all based upon actual shipments. For accuracy and mechanical execution of the work, we concur with the opinion of the Press of Charleston, New-York, and other places, who have bestowed high encomiums, and we recommend it to the attention of Planters and Merchants, who all ought to have a copy for occasional reference.

The work is for sale at the office of Mr. A. E. Miller, East Bay.

[ED. SO. AGR.

HORTICULTURE.

VEGETABLE GARDEN.

BORECOLE.—Brassica.

This variety contains several sub-varieties which are of a peculiarly hardy nature, resisting severe frosts, and retaining their green appearance throughout the winter.

The following are the principal sorts in cultivation:—

Tall green or Scotch Kail.—This sort, if genuine, may be known by its bright light-green leaves, which are deeply lobed and curled: it is equal to any other sort either in producing sprouts or in withstanding the severe weather.

The parts used are the crown of the plant, and the side shoots. It boils well, and is tender, sweet, and delicate, especially after having been exposed to the frost; it is almost impossible to find a plant of greater excellence for the table, or more easy of cultivation: hence it should be largely cultivated in every garden, especially in that of the cottager.

Dwarf-green, or Canada Kail, grows to a less size than the former, but it is of the same quality, and proper for a small garden.

Buda, or Russian Kail, is not only very hardy and well flavoured, but continues to produce sprouts much longer than any other variety.

Culture.—All the varieties of Borecole are raised from seed, which should be sown early in May; the plants will then grow tall and afford an abundance of sprouts; a little seed can also be sown in July and August to produce a late crop, but the plants will be much smaller.

The seeds can be sown thinly in a small bed of dug ground in any part of the garden, and about the middle of July, if the plants are four inches high, they can finally be transplanted to an open compartment, in rows two feet and a half apart, and eighteen inches in the row; the smaller kinds can be planted at a less distance; and they must be watered occasionally, if the weather is dry, till they have struck root. It is a good plan to prick out some in another bed about four inches apart, especially if the plants should come up very thick in the seed bed; as by this means they will become stronger and better rooted for the final transplanting in June, July and August. In their advancing growth, hoe the plants once or twice to clear them of weeds and to draw the earth about the bottom of the stems, by way of encouraging their growth in the production of large full heads in proper season.

BRUSSELS SPROUTS.—Var. BRASSICA.

Of this famed vegetable, there is but one variety, which have been of late years in great repute in this country. Near Brussels, and other large towns in Flanders, the Choux de Bruxelles, as they are there called, are very extensively cultivated; and both there and here form an agreeable, wholesome, and delicious dish, at the table both of the peer and the peasant.

This plant produces an elongated stem, about three feet high, which sprouts out shoots, and forms small green heads like cabbages in miniature, each being from one to two inches in diameter. The crown of the plant is not unlike a late planted savoy, and is cut off for use before the sprouts.

This delicate vegetable can be cooked in several ways; but the following method, communicated to the author by a gentleman many years resident in Brussels, will be found to produce, as old Gerrard used to say, "a dainty dish." After the sprouts have been frosted, a process which renders them more tender and sweet, they may be gathered; (the more close and compact they are the better.) Immerse them in clear soft water for an hour or two, to cleanse them from any dirt or insects: then boil them for about twenty minutes rather quickly, using plenty of water; when soft they must be taken up and well drained; they are then to be put into a stew-pan, with cream, or with a little fresh butter thickened with flour, and seasoned with pepper and salt, and stirred until they are thoroughly hot. They are served up to table with a little tomato vinegar, which greatly heightens their flavour.

The higher classes in Flanders use them with almost every sort of meat, and often stew them with rich gravies.

Culture.—It requires nearly the same treatment as the borecole, only it need not be planted at more than eighteen inches each way, as the head does not spread wide, and the large side leaves generally drop off to make room for the sprouts.

BROCOLI.—Var. BRASSICA.

There is no culinary plant so apt to sport as brocoli; hence new varieties are continually coming into notice. In their growth, habit, and eatable parts, they greatly resemble the cauliflower, all of them forming roundish heads in the centre of their leaves, composed entirely of a compact collection of numerous buds or ends of advancing shoots.

The brocoli is cultivated principally for autumn, winter, and spring use, these being the seasons of its production in the greatest perfection. They are very hardy and resist the cold of an ordinary winter, but very severe frosts will affect and sometimes kill them, as was the case in the extraordinary winter of 1838.

The chief sorts and varieties in general cultivation are as follows:—

1. Early Purple Sprouting. This sort grows to a moderate height, and produces smallish purple heads, and comes a fortnight or more earlier than the others. It is proper for the first crop, which if sown the latter end of March or beginning of April, and again in May, and planted out in June and July, comes in for use from September to January.*

2. Large Late Purple is a robust and growing sort, and produces a large purplish head like a cluster of buds, and is very delicate eating; but as it grows tall, and is more likely to be injured by the frost, it is now generally supersceded by the

3. Dwarf Late Purple, which seldom rises above a foot in height, and is an excellent late and hardy variety, being in perfection throughout April and the greatest part of May. When the heads of the above three varieties are gathered, the stalks produce plenty of fine sprouts terminated by small heads, which are as sweet and tender to the taste as the principal ones.

4. Early Cape is a very useful variety. It produces rather large heads with many shades of colour, but principally a reddish brown. As this sort comes very early, it is an acquisition; the heads, if genuine, are close, firm and compact, but in general they are not of first-rate quality, though a considerable improvement has been made in them within the last forty years, at which time this variety was first introduced.

5. Early White. The author recollects seeing this variety very fine above sixty years ago. The heads are white and of a close texture; the plants are hardy, and grow about two feet high. This sort has of late been greatly improved, especially by Mr. Grange, of Piccadilly and Covent-gardent, who introduced the following variety, now extensively cultivated:—

6. Grange's Early Cauliflower Brocoli, which produces large, fine, compact, white heads, of a conical shape. The leaves nearly cover the heads, and thus afford protection in frosty weather. This sort is, without exception, one of the very best both in colour, size, and flavour; if the seed is sown at three different times, from the beginning of May until the end of June, the plants will produce in succession from September to January.

7. Invisible, or Cup-leaved, derives its name from the long hollow leaves which cross each other on the top of the head and render it invisible, and greatly protect it from the severity of the weather. As it is a late sort, this natural protection renders it a great

* It must be borne in mind, that these dates refer to England—few of the varieties have been cultivated among us, we could not therefore make the necessary alterations. [Ed. So. Agr.

acquisition. The heads are of middling size and a beautiful white colour.

8. Sulphur-coloured or Portsmouth Brocoli. There are many other names attached to this fine variety in the seedsmen's catar logues, but from twenty years' practice and observation, the autho- pronounces them to be derived from that stock, which for a number of years has been largely cultivated in the vicinity of Portsmouth, the Isle of Wight, and Southampton, where perhaps they are pro- duced larger and finer than in any place in the world. This variety is grown also by the London market-gardeners, but not with such success. The author considers the soil near London as too rich and light for growing this sort in perfection: the soil round Portsmouth is not so highly manured, and is rather of a strong loamy kind; the climate too, is perhaps more genial. It is a valuable sort, being hardy and exceeding all others in size. The heads are a buff or cream colour, and very firm and compact; they come in principally from the end of April to the beginning of June.

9. Late Dwarf Tartarian. This sort approaches nearest to the cauliflower than any other; it is quite as delicate and very white. It has but lately been introduced, and is a valuable acquisition; the plants can be planted at the distance of eighteen inches each way, as they do not grow to a large size, and seldom more than one foot in height; they are very hardy and the latest variety of brocoli in cul- tivation. Many gardeners who have plenty of spare ground grow them for early spring cabbages or borecole; and they are found very delicate and wholesome winter greens after Christmas. The author would strongly recommend the cultivation of this sort in every garden as a superior and delicate vegetable.

10. Early Malta White is a good sort, and produces heads of a middling size and white; it is not unlike the Tartarian, but it comes much earlier.

11. Green-headed Winter Brocoli is a variety from the purple cape, and closely succeeds it in coming into use. The plants are dwarf; the heads grow exposed and do not obtain a large size. The greatest care should be taken in saving the seeds of this va- riety, as they are apt to sport and degenerate. This remark applies generally to all the sorts.

12. Miller's Late Dwarf White is also an excellent variety; it comes late, and is of great delicacy. There are also many other white sorts, but they greatly resemble one another; the best and most distinct are named in the above list, and these will be found quite sufficient for cultivation in any garden.

Culture.—All the different sorts and varieties are raised from seeds sown in the open ground at various times. Brocoli in general succeeds best in a fresh rich loamy soil, where it comes more true and hardy; but if this cannot be procured, deep digging, with plenty of manuer, is the only alternative to obtain good crops.

The principal seasons for sowing the main crops are March and April for the autumn and winter productions, and May and the beginning of June for the principal successive crops to come in for the spring supplies: some may occasionally be sown as early as February, or the beginning of March in a warm situation. But if the weather should prove very severe, some protection will be necessary, such as a spare frame, or (what is very good) some dried fern, as this is of a light nature, admits of a circulation of air, and prevents the plants from being drawn up. The white cauliflower, and purple sprouting brocoli are generally the first sown, in order to obtain an earlier autum production, in the beginning of September and October.

The cape is sown about the latter end of May, and will produce heads early in the autumn; a succession may be continued in nearly all the sorts by a second and third planting from such as remain in the seed beds.

If the large late purple is sown about the end of March, fine heads may be expected about that time twelve-month. The proper time for sowing the Portsmouth brocoli is the second week in April; and should the plants come up too thick, they may be hoed with a two-inch hoe, or thinned out with the hand.

The Tartarian vriety should be sown between the 1st and 10th of April; they will then produce their milk white heads about the end of May and beginning of June.

The seed of the different varieties of brocoli should be sown in an open exposure, where the plants grow much stronger than on narrow borders under walls. Each sort must be sown separtely, moderately thick on the surface, and raked in slightly; if the weather at the time of sowing is very dry, water the bed occasionally with a rose watering pot, until the seeds appear, which will be in about ten days or a fortnight. The time of finally transplanting them is June, July and August, and the beginning of September, according to the time they were sown, or are desired for use. The plants delight in a rich loamy soil in an open situation. After the ground has been well dug, and well manured for a previous crop, they may be put in; if the weather is moist at the time, so much the better. They are to be planted in rows two feet and a half apart, and two feet distant in the rows; but for some of the small dwarf varieties, such as the Tartarian and White Malta, eighteen inches each way will be found sufficient. As soon as they are planted they should be watered, and if the weather is dry this process should be continued every other day, until they have taken root. Their further culture is to keep them clear from weeds, by hoeing the ground occasionally, and when they have advanced a little in growth, to draw some earth about their stems, which, if repeated now and then, will be of advantage in promoting their growth.

In gathering brocoli for use the heads should be cut while they remain close, and before they begin to divide and assume a seedy-like appearance, and with about six inches of the main stalk to each head.

Various methods have been advised for the protection of this vegetable in winter, which, if it proves severe, destroys a number of plants, especially if the early part has been mild and open.

The most secure way is, if there is the conveniency of a shed or cellar, to take up such plants as are the most forward in flower, and set them nearly upright in moist sand or light mould, where they will continue to vegetate and come to perfection sufficiently to answer the purpose intended.

Another method is practised by some of the market-gardeners round London, which is to raise the plants with a fork, and lay them slopingly, with their heads towards the north, and only a few inches from the ground. By this means the plants are soon covered and protected by the snow, which generally falls previous to long and severe frosts. It also renders the plants hardier, by the check received in their partial removal.

CABBAGE.—BRASSICA.

We are now come to the head of a most widely-cultivated genus, from which the varieties of brassica, before and hereafter named, are supposed to have proceeded.

The cabbage is one of our most ancient and salubrious vegetables; and as an esculent it stands in the highest estimation.

Brassica is supposed by some to be derived from a Greek word, signifying to devour, because it is eagerly eaten by cattle. Linnæus derives it from the same word, and rightly rendering it to boil, supposes the plant was so called from its being a common pot herb.

The word cabbage, by which all the varieties of this plant are now improperly called, means the firm head or ball that is formed by the leaves turning close over each other; from that circumstance we say the cole has cabbaged, the lettuce has cabbaged, or the tailor has cabbaged, which last means the rolling up pieces of cloth, instead of the list and shreds, which tailors claim as their due.

Like all other cultivated plants, the cabbage has gradually undergone so many changes, and assumed so many permanent varieties, that it is not easy to form a description which will apply to the whole. Great improvements have been made in this excellent vegetable since the beginning of the last century, principally by the skill and industry of the Battersea and other market-gardeners round London.

Cabbages were a favourite vegetable with the Romans, and must have been known in some of their varieties, to our Saxon

ancestors, since the month of February was called by them *sprout-cale.*

The principal varieties in general cultivation are the following, all of which the author has cultivated more or less for a number of years:—

1. Early York. This has been a most valuable early cabbage since its introduction, which took place above one hundred years ago. It was first brought to this country from Flanders by a private soldier, named Telford, who was there many years in the reign of Queen Anne. On his arrival in England, he settled as a seedsman in Yorkshire, whence the name and celebrity of this cabbage. Its earliness and delicate taste and flavour still retain it in estimation; and on account of its small dwarf growth, a great many can be planted in a small compass.

2. Battersea is a roundish, oval-headed and middling sized cabbage, that heads quick, and comes in early, and is excellent for use while moderately young, and before it becomes very hard. It is a valuable sort for the cottage-gardener.

3. Early Nonpareil.—This sort is quite new, and the very best in cultivation. It comes in and heads quicker than any other; and is also of a good size, and of very delicate flavour. Though at present it is not generally known, the author makes no doubt, from what he has seen of it, that it will become a leading variety.

4. Early Sugar-loaf.—This sort was in high estimation fifty years ago, being mostly cultivated in gentlemen's gardens; and the author has doubts if the true sort (which should be perfectly conical,) is now in existence. It was a superior cabbage in respect of its keeping hollow much longer than any other early sort.

5. Paignton or Penton is a favourite cabbage in Cornwall and Devon: in these countries it is called early, though it is fully a month after the earliest about London. It grows to a largish size, and the flavour and taste are excellent.

6. Vanack.—This variety was introduced many years ago by a wealthy Dutch merchant, of the name of Vanack, who inhabited a house at Putney, near London. It was in his time, and for many years afterwards, in much repute as a sweet and delicate variety; but of late the author has heard but little of it.

7. East Ham, in Essex, is famed for producing a fine early cabbage, which, in some places is extensively cultivated: It is not unlike the

8. Early Imperial Brompton, which is a most excellent cabbage, being both early and delicate, and attains a good size. It is a very useful and profitable sort for the cottager and market-gardener.

9. Early Russia is a small roundish cabbage, that comes in about June and July, heads very fast, and soon grows hard; but if used while young and hollow, it is very sweet and tender.

10. Early Emperor is a good early cabbage; but the author is not aware of its superior qualities to merit so high sounding a name. There is another similar variety designated in the seedsmen's catalogues as the early Wellington.

11. Fulham.—This variety is one of the best in cultivation for every culinary purpose, being early, of a good size, and well flavoured, and not so liable to crack after forming the heads, as some of the others.

12. Flat Dutch or Drumhead is a very large spreading cabbage, generally very broad, and flat at the top, and pretty close and firm. It is in perfection in September, and will continue till Christmas, or longer. It is principally valued as a field cabbage for feeding cattle, but is eligible also for occasional family use.

13. Red Dutch is a middle sized, roundish, thick leaved cabbage, heading very hard, and the whole of a red purplish colour; the darker the colour, and the more thick and fleshy the leaves, without any white in the ribs and veins the more valuable. It is in perfection from autumn until the end of winter, as well as in all the spring months till May. This sort is esteemed principally as a choice pickle, and is sometimes sliced in salads in its raw state. All these sorts or varieties of cabbage are biennial, being raised from seed, and attaining perfection the first year, and the second shooting up into stalks, to flower and seed, and soon after wholly perishing.

Culture.—Fortunately the cabbage, one of our most valuable vegetables, can be cultivated by the most simple and easy means: it grows in most soils likely to nourish a plant, and produces its beneficial heads nearly all the year round. In land that has been previously well manured, they do best, especially if it is of a light warm nature, such soils producing the earliest cabbages.

When the land is naturally good, the less dung that is made use of, the sweeter and finer the vegetable; but where it is poor and indifferent, (the whole of the Brassica tribe being of an exhausting nature,) then and then only is a heavy coat of manure necessary. To produce a constant succession of cabbages, three different sowings will be necessary, that is, spring, summer, and autumn.

For the principal spring and early summer crops, the seed of the early York, Nonpareil, or any other early sort, may be sown from the last week in September until the end of the last week in October. Each sort should be sown separately on a bed of light earth, broad-cast, moderately thick, and raked in evenly and lightly. The situation must be open, whether in the seed-bed, or final plantation, as under the drip of trees, or in the shade, seedlings are drawn up weak, and grown crops are meagre, worm-eaten, and ill-flavoured.

If the weather is very dry at the time the seed is sown, occasional waterings will be necessary, or the beds can sometimes be shaded

with a garden mat, or covered with fern, in hot sunny days, till the plants are well up.

Towards the end of October and beginning of November, the forwardest plants of this sowing, provided they have been properly thinned, will be fit to plant out for the first and principal crop in some rich well dug ground, in rows two feet apart; but the early and small varieties can be planted nearer—twelve or eighteen inches will be found sufficient.

In their subsequent growth, if any fail or run to seed, be careful to pull them up directly, and supply the deficiencies with fresh plants. As the crop proceeds, frequent hoeings, by destroying the weeds, loosening the ground between the plants, and drawing some earth round the stems, will strengthen and forward them considerably.

For a successional crop, the large and late sorts can be sown at the same time as the early; and with the same care and treatment they will produce cabbages in succession, according to the lateness of the sort.

For a late summer and autumn crop, sow the seeds as before directed, the end of March and beginning of April. A few for early summer use may be sown the third week of February on a slight hot bed, or on a warm border under glass. The plants will be suitable for transplanting in June, July or August; their after-culture is the same as has been advised for the September sown plants.

Seeds sown in Otober and intended for the Spring crop, should be European, or they will run to seed without heading.

After cutting the cabbages, never neglect immediately to pull up the stalks, and carry them off with the refuse leaves to the compost heap. This practice is enjoined, as well to prevent the stem from pushing out shoots, and needlessly exhausting the ground, as to promote neatness and order. It is necessary, however, to make an exception with regard to removing the roots and stems of the late summer and autumn crop; as, by depriving them of their old and injured leaves and stirring the ground between the rows, they may be allowed to stand till the spring. Thus treated, the stalks in January and February abound in fine cabbage sprouts, and, after being boiled, will be found very tender and not inferior to young cabbages.

The original variety of cabbage called colewort, seems to be lost, and is now succeeded by what are called cabbage coleworts, which at the present day are nearly as valuable as an early crop of cabbages. Many hundreds of acres are annually planted in the vicinity of London, and the author has known two crops cleared off from the same piece of ground, soon after Christmas; he therefore recommends the adoption of it not only to the gentleman's garderner, but to the market gardener and cottager.

The seed for raising this crop should be sown the last week in June and the middle of July, in beds the same as for cabbage plants; the forwardest will be fit for transplanting in about six weeks, in August, September, and October, and will amount to a continued provision of autumn, winter, and early spring coleworts. As it is intended to gather them when young, they may be planted in open compartments of ground, in rows twelve or fifteen inches apart and eight or ten inches in the lines. At the time of planting, if the weather is very dry and warm, a watering would be of advantage. In their subsequent growth, they require to be kept clear from large weeds by occasional hoeing, though this is seldom necessary, as they come so soon, thus leaving the ground vacant for any other early crop, which not being ready, or too soon, another lot of coleworts can be planted; and from their coming so quickly, little nourishment is drawn from the ground. They should be pulled up as they are wanted for use, according to the quantity required, and when beginning to heart they will be found far superior in every way to the sprouts of the early cabbages, which have generally undergone the ordeal of the caterpillars and other insects.

The propagation and culture of the red cabbage are the same in all respects as for the white, excepting that the heads are never used when imperfectly formed, or as coleworts; but the plants should, in all cases, be allowed to stand till they have formed close firm heads.

Two sowings will be necessary; the first and principal one in August, for a crop to stand the winter, and to come in at the close of next summer; the second early in spring, for returns in the following winter and spring.

THE FLOWER GARDEN.

PERENNIAL BORDER FLOWERS.

Any of the hardy fibrous-rooted flowers may be grown in the parterre or the border in the same way as already directed for annuals, with which indeed they may be mixed so as to supply vacancies during particular months. Few annuals, unless sown the preceding autumn, or forwarded on heat in the spring, can be brought to flower before June, [May,] and hence, without early flowering perenials the flower-garden would exhibit nothing but a blank in spring and the first part of summer. Bulbs and corms indeed are the most numerous of our early blowing flowers; but there are also not a few with fibrous roots which come into blow before any annuals have shown flower: such as several species of *Viola*, *Primula*, *Tussilago*, *Adonis*, *Phlox*, and many others, distinguished either by beauty or fragrance, and sometimes by both. It will be requisite to give a few general directions for the propagation and culture of flowers of this description, which are by far too numerous to allow us to consider each separately.

All the various modes of propagation, seed-sowing, division, laying, and striking by slips, are resorted to according to the species and varieties to be propagated.

SEED-SOWING.

Some sorts of perennials, such as the large-flowered and the everlasting pea-vetches (*Lythyrus grandiflorus* and *L. latifolius*,) will not blow for at least two and sometimes several years after sowing, while several other species may blow the same year, provided that they are either sown early, or at first brought forward on heat. It is requisite to bear this in mind to prevent disappointments, by trusting to works which state that they will "blow the following year." I cannot, of course, particularise all the sorts in which this diversity as to the time of blowing takes place; for even if it had been recorded, as it is not, by botanists or practical florists, it would occupy more space than could here be spared.

The best time of sowing all hardy seeds of this kind is the same as for hardy annuals, in order to bring them forward to make strong plants by the autumn. Should they be sown earlier, therefore, than they may be well able to stand in the seed leaf, any inclement weather that may occur may be warded off by the ingenious plan first proposed by Mr. J. Harrison, with respect to annuals, of covering them with inverted garden pots, as directed above Independent of every other consideration, this is very effectual in protecting the sown seed as well as the seedlings, when just up,

from the depredations of sparrows and other birds, which frequently entirely destroy the most valuable sowings.—*(Hort. Trans.)*

The depth at which the seeds should be buried in the ground will depend on their magnitude. Peas or lupins may be planted about an inch or less in depth, while such seeds as those of *Lychnis* must be very thinly covered to insure their germination. It is on this account that seeds, which are buried deep, when turned up several years afterwards, often germinate. If the larger seeds again are not put deep enough, the roots do not establish themselves so strongly.

It is also necessary to be aware that most seeds are rendered difficult to germinate by being kept longer than one year. In consequence of this, among fifty sorts of Alpine seeds which I purchased at Chamouni, in Switzerland, not one germinated. Some species are not affected by being kept many years, but this is an exception rather than a rule.

When seeds are gathered before they are quite ripe, it has been proved by experiment that they germinate sooner than very ripe ones: obviously because the nutrient matter is less hard and more easily diluted with water,—an indispensable material in producing germination. But though seeds, when gathered before they are quite ripe, germinate sooner than riper ones, it does not follow that they will produce the best plants, yet as variety in the colours and forms of flowers often appear to depend on some derangement or weakening of their natural constitution, the sowing of under-ripe seeds may have a chance to surprise the florist with new and valuable varieties.

Most double varieties, from not producing seed (though some flowers do,) as well as those with variegated leaves, cannot be propagated by seed, and therefore recourse must be had to the other modes of propagation.

MANAGEMENT OF SEEDLINGS.

According to the nature of the various sorts, it will be necessary to strengthen them by pricking out from the seed bed, and afterwards transplanting.

Some sorts do not bear well with transplanting and shifting; such as the pea-vetches mentioned in the preceding section, as this would be certain to prevent them from blooming for at least a whole year.

Other sorts again are as much improved by it, as is well known to be the case in kitchen gardening with cabbage, celery, parsley, leeks, and lettuce. The check in the growth, caused by pricking out and transplanting, is, in the sorts it agrees with, advantageous, because the leaf pulp becomes much thickened by the great loss of water and oxygen, when it returns to the crown of the root, it lays the basis of fresh branches, terminating in flower buds.

On the other hand, if a seedling plant were to remain unmoved in a rich soil well watered, it would probably send up more sap than the light could readily deprive of its water and oxygen, and would in consequence push out new leaves to carry off the superabundance, while there would be no pulp formed thick enough and containing enough of carbon to produce flowers or to perfect seed.

Care should be taken not to plant the roots too deep so as to be out of the reach of air, nor too shallow to expose them to drought. This, however, must be regulated by the sorts of roots; those which are small and fibrous requiring to be planted much shallower than those which are long, thick, and tapering, or which run far under ground like the large-flowered pea-vetch already mentioned, and the fragrant coltsfoot *(Tussilago fragrans,)* which may with safety be planted nearly a foot deep, provided the crowns are not far buried beneath the soil. But if such genera as *Phlox*, *Lychnis*, *Trollius*, *Aster*, and the like were planted as deep, it would be almost certain to kill them.

The transplanting of some genera is very apt to check their growth, so much as to prevent their flowering not only the second, but even the third year, though it may be advantageous to transplant even with the very view of thus retarding the flowering; as it may, under judicious management, so increase the vigour of the plants, as to render the bloom much larger and finer. The perennial lupins *(Lupinus polyphyllus* and *L. Marshallianus,)* may be mentioned as examples; and another will fall to be noticed under the culture of the pyramidal bell-flower *(Campanula pyramidalis,)* in a subsequent page.

In preparing the seedling plants for removal, it may be advisable in some instances to trim off a few of the root fibres, with the view of diminishing the supply of sap, and causing new root fibres to grow; a thing which ought never to be done where luxurlance of leaves is an object, and hence the old practice of trimming both the root fibres and the branches or leaves at the same time is in most cases highly absurd. To trim off a few of the outer and larger leaves may be useful, particularly in very warm bright weather, to prevent a greater evaporation of moisture from the leaves than the root fibres, not yet established in their new situation, can supply.

The distances at which the plants are to be put, must be regulated by the circumstances of the height and the branching out of the peculiar species. If they are planted too closely together, their roots must go to the same spot to procure nourishment, which they will consequently soon exhaust and become therefore more or less starved, while the branches and leaves, by mutually interfering, must prevent the free circulation of air; and, by overshadowing the ground, must also prevent the free circulation of water.

On the same account, it will be indispensable to keep the ground clear of weeds, and of chance seedling flowers, which when out of place may be considered as weeds.

DIVISION OF THE ROOTS.

In the case of such plants as form buds or eyes on their roots, similar to the eyes of tuberous roots, such eyes with a piece of the root may be cut off, and planted in a similar manner to that already directed for anemones and dahlias. Examples of plants which may be thus propagated, are the alpine and the narrow-leaved willow herb *(Epilobium Alpinum* and *E. angustifolium,)* the turfy evening primrose *(Œnothera cæspitosa,)* various species of *Monarda,* and most of those perennial plants, exclusive of bulbs and corms, whose stems and leaves die wholly down in the winter. It is indispensable to have the places of all such plants marked before winter, so that the roots may not be injured when the ground is dug up, and that the roots may easily be found the ensuing spring.

In the end of March or beginning of April, [February and March,] such roots may be dug up, and cuttings containing one or more buds or eyes may be taken and planted out to form new plants; taking care not to plant them either too deep or too shallow.

It may be requisite in the case of the more delicate sorts to nurse them a little, by planting them in the shade till they shoot, and afterwards transplanting them, but with many sorts this precaution will be unnecessary. The American sun-flower *(Helianthus multiflorus,)* for example, will readily grow from root cuttings planted out where they are to remain in almost any soil or situation, while *Monarda, Mentha,* and the willow herbs, are in this way of still more easy culture.

It is necessary to remark, however, that the young plants raised from cuttings of the roots, do not in all cases flower the same year, though this often depends on the period at which the cuttings are taken, and on the nature of their after management. When it is an object to have them flower the same year, care must be taken to forward their growth by protection in the early spring, and by watering in dry summer weather, otherwise they will not attain their due size and vigour for flowering till too late in the season.

DIVISION OF THE PLANTS.

A great number of fibrous-rooted flowers which do not form buds or eyes on the roots, and therefore do not admit of the preceding mode of propagation, may be increased by dividing the plants themselves, when these form several crowns above the roots, having root-fibres attached to each, or at least connected therewith.

These several crowns may be detached for planting out, taking care to separate along with them as many of the attached root-fibres as possible, in order to have the plants strong.

The genus globe-flower *(Trollius,)* furnishes a good example of this mode of propagation, which in this case may be performed at almost any season of the year; but in order to have good plants, the spring or early in autumn are the preferable periods. All the directions indeed which have already been minutely given for the auricula and polyanthus will be applicable here. The pencilled crane's-bill *(Geranium Lancastriense,)* is another good instance.

The general rule applicable to all sorts is, to divide them either as soon as they have done flowering, when their natural season of rest commences; or early in spring, before or about the time when their most vigorous growth begins. By the first method, the plants will in general be rendered stronger for their first bloom; by the second, time will be gained where that is an object, and where not, the first flower buds may be pinched off, to render the plants strong for the succeeding season.

In cases where abundance of root-fibres can be detached, no preparatory nursing will be required, and the young plants may at once be put in where they are to remain.

It is necessary to mention that some sorts, such as the common columbine *(Aquilegia vulgaris,)* though they form very distinct crowns, cannot be propagated in this way, detaching the crowns being certain to kill them.

SUCKERS, OFFSETS, AND RUNNERS.

When plants form rooted scions contiguous to the mother root at various distances, these may be detached and planted out so as to form young plants, which must of course be managed according to the nature of the sorts, and the time of taking them. Rooted suckers, such as those from the genera *Aster*, *Monarda*, and *Solidago*, may be detached on their first appearance above ground, and planted out where they are to remain; while offsets, such as those of the genera *Valantia*, *Alyssum*, *Sedum*, and the like, require to be planted out in reserve or nursery beds, to be brought forward previous to the final planting.

The spring is the best season for detaching suckers and offsets, if they can then be procured; for some sorts do not produce them till late in the summer, or even in the autumn. The cultivator will in these cases have to be guided in his operations entirely by circumstances. If the sort to be operated upon be hardy and easy of cultivation, the suckers or offsets may be removed in the autumn; but on the contrary, in some delicate sorts they had better be left till the following spring; for if they do not form roots before the setting in of the winter frosts, they will be almost certain to perish.

Runners, such as those of the genera *Potentilla*, *Viola*, and *Glechoma*, require to be detached as early as possible in spring, and carefully nursed into strong plants for final transplanting in the

autumn, to flower the succeeding year. Those runners which are detached late in the summer will seldom flower for two years; but then if the runners are pinched off the next season, it will render them very strong and vigorous for blooming.

The runners of *Cymbalaria* and the like, being more of the nature of trailing shoots, require to be treated more in the manner of layers, as we shall presently direct.

LAYING.

When the shoots from the sides of the crowns or near the ground cannot be detached with root-fibres to them ready formed, they may be pegged down till they acquire roots fit for allowing them to be separated with safety. The laying must be differently managed, according to the nature of the sorts to be laid. Such sorts, for instance, as Russel's cinquefoil *(Potentilla Russelliana,)* require merely to have a little earth laid over the stem of the shoot, leaving the top about an inch above ground, without cutting or twisting.

In other cases, similar management must be adopted to that directed for laying carnations, such as by forming a slit in the stem, cutting it half through in a direction sloping upwards, or the outer bark may be ringed round, or the stem may be pierced in several directions with a brad-awl, or bound tightly round with a wire, or twisted half round,—all of which operations have the same design of checking the descent of the pulp, while the sap, going up in the more central parts, is not interrupted, and consequently the layered branch grows as well as, if not better than, if it had not been so treated.

In order to make the layer strike root the more readily, the earth around it should neither be too loose nor too firm—too dry nor too moist. In the latter case, indeed, it might cause the cut part to produce canker, and rot the whole shoot.

It may easily be ascertained whether a layer have pushed root-fibres, by removing a portion of the earth around the part pegged down, when it will be seen whether roots are running into the soil.

About the end of autumn, layered plants are for the most part furnished with new roots, to feed them without farther dependence on the parent plant; but they are in general still weaker than seedlings, and require not only to be watered, but the more delicate sorts not exposed to too bright sunshine.

STRIKING BY STEM CUTTINGS.

The principles already explained when treating of dahlia strikings and the pipings of pinks and carnations, are applicable to most if not all, the sorts of border flowers, though it is not so usual to have recourse to this mode of propagation as to the preceding methods.

The most effectual method of striking most species is by means of bottom heat, using sand, or sand and peat, as the soil, and covering the whole with a hand-glass for two or three weeks at least.

In cases, however, in which there is no hot-bed nor hand-glasses, or where the requisite attention cannot be given to this mode of propagation, many of the less delicate sorts of border flowers may be struck in the open ground, by selecting a shady place or a northern aspect, and after the cuttings are put in by keeping them moderately moist. Regular and not too copious watering, so as to cause dropsy by over-gorging, and shelter from too much dry air and bright sunshine, so as not to cause exhaustion, are indispensable to the success of the process. When the strikings are well rooted, which may in general be known by their growth, they may be treated exactly as already directed with respect to layers, remembering that they are more delicate than seedlings, except in the circumstance of withstanding frost, it being proved by experience, that frost is much less likely to injure cuttings than seedlings, or even than old plants.—*Flower Garden.*

(To be continued.)

CULTURE OF THE HIBISCUS.

The species are all showy flowering plants. The shrubby stove kinds thrive best in a mixture of loam and peat. Cuttings will strike root readily in sand or mould under a bell or hand-glass, in heat. The green-house shrubby species require nearly the same treatment as the stove kinds. The annual stove species should be sown in pots and placed in a hot-bed frame, and when the plants are of a sufficient size, they should be separated and planted singly in pots, in a mixture of loam and peat; and after they have recovered this shifting they should be removed to the stove, where they may remain until they have ripened their seed. The H. Syriacus or Althæa frutex, is the only hardy shrubby species. It will thrive well in any common garden soil, and may be raised in abundence from either seeds or layers. The different varieties of this plant may be grafted on each other, and cuttings planted under a hand glass will strike root freely. The hardy herbaceous species, which are very showy, thrive best in a moist soil, but being rather tender, most of them require protection in severe winters; they are only increased by dividing the plants at the root in spring.—*Don's Miller's Dictionary.*

CULTURE OF THE STOCK GILLIFLOWERS.

THE method to procure fine double Stock Gilliflowers, Brompton and Queen Stocks, is to make choice of such single flowering plants as grow near many double ones, for it has been observed, that seed saved from plants growing among double kinds, have produced a much greater number of double flowering plants than those which have been saved from plants separated from the double ones. Sow the seed in May, [March,] and after they have reached two or three inches high, they should be thinned, at least nine inches asunder, and the plants so taken out, may be planted at about six inches apart in the flower border. If the following winter should be severe, the plants should be sheltered by mats, and in the following May and June [March and April,] they will become the greatest ornament to the flower border.

Fine double varieties may be propagated by cuttings, which take root readily, if planted under a hand-glass and shaded. The Annual or Ten-week-Stock should be sown at three or four different times, February, March, April and May; the plants from the last sowing will continue to flower till Christmas. Care should be taken in preserving only such single flowering plants for seed, both of the Stock-Gilliflower and Ten-week-Stock, as have flowers of a fine colour. All the biennial and hardy shrub-species of Mathiola, should be treated in the same manner as that recommended for the Stock-Gilliflower, and all annual species in the manner recommended for Ten-Week-Stocks. Fine double stocks may be planted in pots, in order that they may be sheltered by a frame during winter. M. fenestralis thrives best, if sown on rock-work. The greenhouse shrubby kinds thrives best in a light soil, mixed with sand, and cuttings will strike readily, if planted under a bell glass.—*Don's Miller's Dictionary.*

CULTURE OF WALL-FLOWERS.—CHEIRANTHUS.

The hardy shrubby species, such as fine varieties of the common Wall-flower, should be increased by young cuttings; which will soon strike, if planted under a hand-glass. The greenhouse or frame kinds will thrive in a very light rich soil; and young cuttings planted in the same kind of soil, will strike most freely under a hand-glass. The perennial or herbaceous species may be increased by dividing the plants at the root, by young cuttings planted under a hand-glass, or by seeds. The biennial and annual species, only require to be sown in the open border; some of the tenderer sorts, or those natives of warmer climates, may be sown in a genial hot-bed, in the month of March, [February,] and transplanted in the open borders about the middle or end of April, [March.] The whole of the species answer well to be planted or sown on rock-work, and even the tenderer species will survive the winter in such a situation.—*Don's Miller's Dictionary.*

For the Southern Agriculturist.

ON THE DESTRUCTION OF SNAILS IN FLOWER GARDENS.

Mr. Editor:—One of the greatest annoyances which I have experienced in the cultivation of flowers, has been from the depredations committed by that apparently insignificant insect, the snail. The last year they were uncommonly numerous, and many a beautiful flower which the owner prized much and was perhaps anxiously watching, was laid low by these night depredators, and many a garden which but for them would have been highly attractive, looked dessolate and forlorn. I do not know whether I was more unfortunate than my acquaintances, but certainly I had appearently four times as many as I had ever had before. I did not observe the depredations until late, having been so much engaged elsewhere as not to be able to visit the garden but for a moment, and at long intervals. When I did notice them, the mischief had been done, and they were in such myriads that I dispared of getting rid of them, and yielded up the possession of the garden.

This year I fear they will be as numerous, and of course, as destructive as ever, if I may judge from the numbers which have already made their appearance in the garden. I have looked over my books, and find that it is recommended to destroy them by sprinkling lime over the beds, (which has an unsightly appearance,) or to water the beds *late in the evenings* with lime water. I have not tried either of these remedies as yet, but I have watered the beds with soap-suds, which is highly destructive to insects. What number there may have been, of killed and wounded, I know not, but certainly on those beds they are as numerous now as on those which were not so treated. Another method which is recommended and which I have tried with success, is to scatter cabbage or turnip leaves, or slices of potatoes or turnips over the beds. The snails, attracted by these, of which they are exceedingly fond, (and apparently more so when they become wiltered,) congregate there in great numbers, and in the mornings they will be found in quantities, which will surprise those who have not made the experiment, sheltered under the leaves, or covered with a little earth, so that they may be raked up with the hand like marbles, and what will add materially to the pleasure of the discovery, the adjacent plants will be found untouched by them. During the few warm days we had a short time since, they have come out in immense numbers and my anemonies, ranunculuses and other bulbs being just up, I feared for them. As soon therefore as I discovered that the plants were breaking the ground, I scattered a few cabbage leaves over the beds, and I will mention for the satisfaction of all florists, that

up to this time, I have not discovered a single plant cut by them on those beds where the leaves have been spread. Of the quantities which I have had to contend with, some opinion may be formed, when I mention the fact, that one morning I gathered a five inch flower pot, heaped up, from under five moderate sized leaves, in fact some were not more than half leaves. I had not time to go over the whole garden, but left it to the gardener, whose business I have made it to gather them every morning, from under these vegetable traps. I have been so delighted with my success that I could not refrain from communicating it for publication in your journal, especially as I know several fine gardens were ruined the last season by these insects. I hope my friends and your readers generally may profit by the few remarks I have made, and by following the plan, (or any better one, if there be such, and of which I will esteem it a favor to be informed,) preserve their plants to beautify and adorn their gardens.

Before I conclude I will mention a remedy I have made use of against the common red ants. During the past winter my hot bed, and especially the pots containing plants were infested with them, and I do believe there were near a dozen nests, in as many pots. The injury they did the plants was very great, uprooting the earth, and raising mounds in them. Several I had to re-pot, and found the bottom of the pots filled with ants and their eggs. When dislodged from one pot they took to another. After trying several remedies without effect, I watered them with soap suds, taken from the wash tub. A single watering entirely destroyed them and relieved me from this intolerable nuisance.

AN AMATEUR.

Charleston, February 15th, 1841.

For the Southern Agriculturist.

ON THE CULTIVATION OF THE CAMELLIA JAPONICA.

Mr. Editor :—This universally admired genus of plants has very deservedly received much attention from every lover of flowers. Assuredly they possess various qualities which render them interesting objects of the florists care. Although the Camellia is by no means tender, neither is it like some of the more delicate exotics peculiarly susceptible of indifferent treatment, yet to grow them to perfection there are some points in their cultivation absolutely essential to ensure a free growth and profuse bloom. In the first place, a proper compost is of the utmost importance; and for the Camella I have found the following answer in an eminent degree. Of friable sandy loam from a common where cattle have been accustomed to graze, take three-fifts :—only the surface soil, say not

deeper than six or eight inches, is to be selected, and if the herbage is included so much the better. This must be well pulverised by long exposure to the atmosphere and repeated turnings over; to this I add one-fifth thoroughly decomposed cow-dung and one-fifth of decayed vegetable mould, obtained from the leaves of oak or hickory. Let the whole be thoroughly incorporated and any refuse carefully picked out—by no means sift the compost. The period I prefer for shifting is the month of September. The blossom buds being then formed there is no danger of creating too much luxurience, which sometimes is the case when shifted in the spring, and the consequence a sparcity of bloom which of course detract very much from the superb display this beautiful tribe is so well calculated to afford.

In re-potting, above all things, guard against *over-potting*. This of all errors in the cultivation of plants is one of the most common, most injurious,—and cannot be too much repudiated. On examining the roots of the plant if they have not penetrated through the soil to the inside of the pot, it may sometimes in such a case, be advisable to reduce the ball, re-pot in a pot of the same or even a smaller size. A proper drainage of broken pot sherds over the bottom of the pot should be particularly attended to. By placing a single piece of tile, oyster-shell, &c., which is too frequently done, a due drainage is frustrated, which is an important point in the cultivation of every plant. In the operation of potting, add the fresh soil in small portions at a time; repeatedly raise the pot from the potting board and bring it down with some force, only be careful to keep the pot in a perpendicular position, otherwise it would in all probability be broken. This movement is intended to settle the earth in a regular manner in every part, which in potting is a very essential point. A flat stick about an inch wide may be used to advantage for the same purpose. As the plants are potted let them be placed in a shaded situation for a week or ten days. The next point of importance in the cultivation of the Camellia is to keep them as far as practicable in an even temperature. Sudden transitions are highly injurious—and the damper the atmosphere so much the more will success attend their cultivation. During the season of their growth, and particularly when their flower buds begin to swell, water must be administered in a copious degree, and not only at the roots, but all over the plants. This may easily be effected by means of a common watering-pot, with a rose or strainer. Only let it be remembered this method of watering, as gardeners term it, overhead, must be discontinued as soon as the blossoms begin to expand. When plants are grown in rooms, where the air must naturally be arid and uncongenial, every opportunity should be taken advantage of, to expose them freely to the natural air, otherwise the buds will have a great tendency to fall off without developing their transcendent beauties. During the summer the

Camellia will thrive better than almost any other plant without sunshine. This is frequently taken undue advantage of by placing them in situations where the atmosphere is confined, which is precisely the reverse of what ought to be done, for the more free and airy the situation so much the better. Under the shade of trees and such like situations is particularly unfavourable. The best construction I have seen for the Camellia during summer was in the garden of Col. Perkens, Brookline, near Boston. In an airy part of the flower-garden, a summer habitation for the camellia was constructed as follows:—The building was about ten feet high from the ground to the centre of the roof—the sides about five feet high, with a span roof, which was covered with lathes about two inches wide, and only a quarter of an inch in thickness. These were placed with a vacancy between each lath of about three quarters of an inch. The sides were constructed in the same manner, but in different pieces like sashes, which by means of hinges could be raised or lowered at pleasure, by these means a free circulation of air had access to the plants at all times and an ample portion of the suns rays (for the Camellia,) were admitted through the various apertures in the sides and roof. The whole was painted white, and had a neat appearance.

In conclusion I will simply state, that a medium even temperature—a humid atmosphere—a free admission of air—protection from the intense rays of the sun—growing the respective plants in proper sized pots—adhering to the above described compost—regularity in watering, and keeping the foliage free from dust, &c., are the principal essential points in the cultivation of the Camellia.

Yours, very respectfully,

ALEXANDER GORDON.

Georgetown, S. C., March 29th, 1841.

THE ORCHARD.

Translated for the Southern Agriculturist.

CULTIVATION OF THE PEAR.

Mr. Editor:—The Pear tree succeeds best in fresh soils that are deep and calcareous, and rather light than stiff. In stiff and clayey, moist, cold soils, it succeeds badly, and its stony and split fruits are absolutely without flavour. In shallow soils reposing upon a clay or ferruginous sub-soil, that is impermeable to water, it languishes for some years; its leaves grow long and become yellowish, its bark is covered with moss, it produces but little fruit and that of an inferior quality; and it finally perishes after having languished ten or twelve years.

Pear trees are multiplied by seeds, and by grafting,* upon the Quince or upon the pear tree stock. If full standards of the largest size are wished, seedlings (and not suckers,) of the wild† pear tree must be sought in the woods, or seeds of the wild pear must be sown. In this way are obtained strong, vigorous, and long-lived trees. If full standards of a smaller size, and bearing fruit earlier are desired, seeds of Perry pears must be sown, and they must not be taken out of the pommace or marc until they are to be sown.—Finally, if still smaller and earlier fruiting standards are desired, the seed of dessert pears must be sown in preference. These last furnish very good subjects for distaffs *(quenonilles,)* and for espaliers, destined to be planted in inferior soils where the Quince does not thrive. For distaffs, espaliers, vases, and other pear trees of smaller dimensions, a nursery of Quinces‡ must be established.

The grafting or budding§ for full standards is sometimes performed at the top of a stem that has been formed in raising the stock, but we would remark that it is always better to perform this operation at six inches from the ground, because if the stem is broken by one of the accidents so common in all cultivations, there remains the resource of forming a new head without grafting anew, an operation often very difficult after a tree has attained a certain size. It is scarcely necessary to say, that distaffs and other small trees must be grafted near the ground. The grafting is performed by inoculations in the summer, or by cleft grafting in the spring. The latter operation is scarcely used, except for free stocks and wildings, because it is pretended that it furnishes shorter lived trees; which does not appear to me sufficiently proved. However that may be, it is necessary to cut the scions from healthy trees, for if the trees are attacked with any disease, it is certain the disease will be perpetuated upon the new individual. When the standard trees have been grafted two years, they may be taken from the nursery and placed where they are to remain; but distaffs and espaliers ought to be allowed to remain three, and even four years.

The most successful transplantings are those which are done in the autumn, unless the soil is stiff and moist, and apt to retain the rains of winter; in this case it is better to wait until spring. The earth ought to be stirred two or three feet deep and even more if possible, and suitably manured; the surface soil ought to be placed at the bottom, and finally the holes that are to receive the trees are to be dug; the larger and deeper these are, the better the trees will grow.

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* Budding is included in the general term grafting.—*Translator.*

† I believe that the Pear tree is not indigenous in America, and therefore wild trees cannot be procured.—*Translator.*

‡ The Quince grows freely from cuttings put down at any time during the winter, and I believe even during the summer. At any rate I have succeeded with the few I have tried.—*Translator.*

§ By grafting, fruit is obtained sometimes much sooner than by budding. Loudon says two years.—*Translator.*

The trees must be taken up in the nursery with great care, in order to bruise or break the roots as little as possible, and they are to be put in their places without pruning or shortening, unless it be the bruised or broken parts; they must be properly spread out upon the earth at the bottom, by placing them in their natural position, and insinuating the earth between them by stirring it from time to time in order to fill up all the interstices. Finish filling up the hole, and press or trample a little around the foot of the tree, in order to steady it in its place. Plant rather high, in order that the scion may not be under ground when the earth settles down.

Standards ought to be pruned only the first two or three years, and only in order to make their headings regular. They may then be left to follow their own fancy, nevertheless taking the precaution to examine them every year in order to cut out the water-sprouts which might flourish at the expense of the others, and those that are weakly, ill-placed or dead.

Pruning of Distaffs.—We describe this pruning because it has been most used for the last fifty years. The subject upon which it is practised ought to be grafted at six inches from the ground. The first year head the stem down to six or eight inches, in order to make it shoot out two lateral shoots destined to furnish the distaff below which is absolutely essential, and a third to form a continuation of the stem or boll. The second year head the terminal bud down to twelve or eighteen inches, more or less, according to its vigor, shorten the lateral branches in order to make them put out secondary branches, which ought to be kept very short; leave only the branches necessary to furnish perfectly the distaff from below upwards, and pinch off all the other buds. Each year continue to raise the distaff by pruning the terminal shoot in such manner as to make it produce well placed lateral branches; these branches ought to be by stages or stories; thus if the first shoots out in front, the next one above must shoot out on the right hand side, the third behind, and the fourth on the left, the fifth will be placed above the first, the sixth above the second, and so on, so that all the insertions form a kind of spiral around the trunk; by this means all the branches can enjoy the benefit of the air and light, and there will be no confusion. It is indispensable that all the branches go off from the trunk perpendicular to its axis, like the spokes of a wheel. Nothing is easier than to make them take this direction. It is as follows:—if a branch threatens to shoot to the right, prune it back to a bud, on its left; if on the contrary it turns too much to the left prune it back to a bud placed on its right side. In order to prevent the bud which ought to form its continuation from taking the same direction as itself, leave about one inch beyond the bud, which, leaves a small stump which compels the bud to develop itself laterally; this stump is cut off in the autumn.—When a branch grows too horizontally, it is compelled to grow

upwards, by employing the same means, that is to say, by pruning back to a bud placed on its upper side; if on the contrary it rises too much, by pruning back to a bud placed on its under side. But it must not be attempted to give to the branches of a pear tree too arbitrary an inclination, as each variety requires an inclination more or less determined and even calculable; and if it were to be too much constrained it might injure the vigor of the individual. A well arranged distaff ought to have the figure of a lengthened and regular cone. The fruit spurs must be husbanded. They are recognised by their being large, short and folded, or wrinkled transversely.

Bush or Dwarf.—Imagine an espalier trained upon five principal branches, and that it was rounded in the form of a trumpet, by twisting and approaching the two wings, and you will have a perfect idea of a goblet shaped Dwarf. The tree is trained as we see upon five branches, which all start from the crown of the root, and which diverge from each other in rising in such a way as to form a reversed cone. In order to keep them in this shape, they are tied to hoops which are large in proportion, as they are nearer the summit. The interior ought to be entirely open. The choice of the exposure is not indifferent to the pear tree. For instance, the early fruits like to be to the east, and the summer fruits in the same way prefer a western exposure; but the winter fruits do not succeed nor acquire all their qualities except in a southern aspect. It is necessary that the varieties that are very fruitful and would exhaust themselves in bearing should be pruned short in order to make them grow wood, while those that are bad bearers ought to be pruned long.

Every year for standards as well as others, there ought to be bestowed a good autumn working, but with a fork, in order not to hurt the roots, and during the summer hoe and weed as often as possible. Every four or five years, in order to restore the fertility of the soil, manure with good half rotted manure. In warm dry soils, cow-manure should be used; in those which are stiff and cold that of horses is to be preferred.

Pear trees, particularly in soils which do not suit them, are liable to become covered with mosses and lichens, which besides keeping up on the bark a very injurious moisture, serve as a harbor for destructive insects. Great care must be taken to get rid of these parasitic plants as fast as they appear.

GARDENER'S CALENDAR FOR MARCH.

VEGETABLE GARDEN.

Sow Peas, Beans, (Kidney and Lima,) Carrots, Beets, Salsafy, Parsnips, Turnips, Leeks, Onions, Spinage, Radishes, Tomatoes, Guinea Squash, Peppers, Cauliflowers, Brocoli, Cabbages, Cucumbers, Melons, Squashes, Pumpkins, Okra, Lettuce, Endive Cress, small Salading, New Zealand Spinage, Swiss Card. Transplant Cabbages, Tomatoes, Cauliflower, Brocoli, Guinea Squashes, Peppers, Lettuce, &c.

Plant Mangoes, Yams Massicot, Irish and Sweet Potatoes.

Remarks.—Most of the above vegetables should be got in, in the early part of the month. Peas may yet be sown. The Woodford's Marrow are said to be the best at this season. The principal crops of Carrots, Beets, Salsafy and Parsnips should be sown now, and enough of them to last during the season, as it will be somewhat difficult to get them up during the dry spring months. Turnips, Spinage and Radishes should be sown only in small quantities, the latter every three weeks. The Cauliflower and Brocoli sown now, will require to be frequently transplanted during the summer, to prevent their growing too tall; but if they can be got through the summer they will produce the finest heads. Those which were raised during the winter should now be put out into highly manured, and rather low or moist ground. The Lettuce now sown should be where they are to remain, as they do not succeed well if transplanted. The New Zealand Spinage should be sown on hills three feet apart. The Mangoes *(Sycios Edulis,)* being a vine, and growing very rapidly and vigorously, will require an arbour or trellis for its support—it should be manured very highly.* The Yam Massicot will also require support.

THE FLOWER GARDEN.

Ranunculus and Tulip beds will now require shading, to protect the flowers from the influence of sun-shine and rain.

Hyacinths, Polyanthus, Jonquils, &c., should have their flower stalks supported.

Rose Cuttings may now be put in, and Roses which it is designed to flower late, should now be pruned back.

Geranium Cuttings should now be put in.

Hardy Annuals may still be sown, as also those which are more tender. Those which were sown last month in pots, may towards the middle of this month be transplanted out.

Biennials should be sown now to blossom the next year.

ORCHARD.

Overlook your trees and remove all Caterpillars which may be secreted among the leaves. Prune off all superfluous branches, and rub off all young wood which appears, where not wanted. Overlook the Grape vines and tie those securely which may be loose.

* In one of our subsequent numbers we shall give an account of this delightful vegetable.